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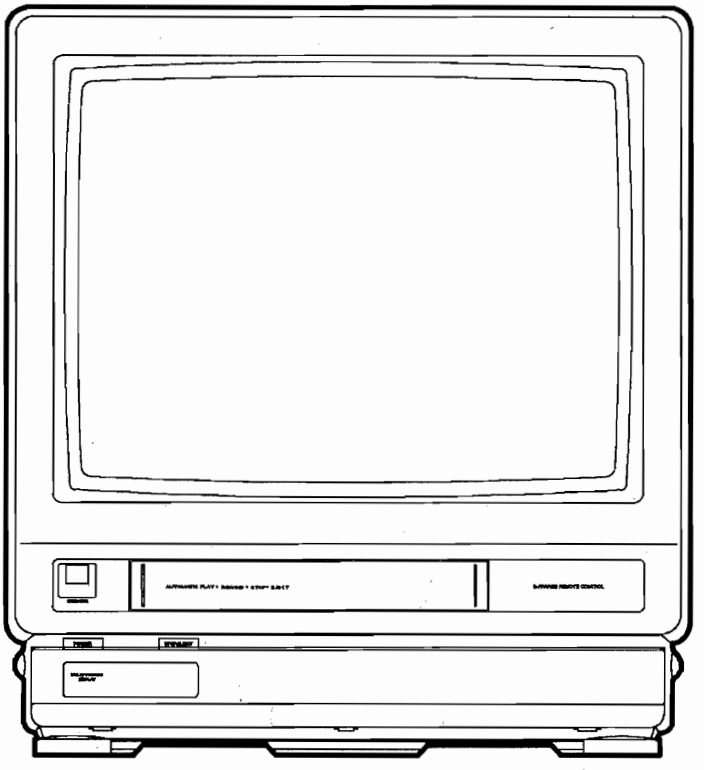
FUNAI

Symphonic

SERVICE MANUAL

13" COLOR TV/VCR COMBINATION

13TVCR MK-III VHS TVCR 13F III



IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe, reliable operation of all Funai / Symphonic Equipment. The service procedures recommended by Funai and described in this service manual are effective methods of performing service operations. Some of these service special tools should be used when and as recommended.

It is important to note that this service manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. the possibility exists that improper service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Funai could not posibly know, evaluate and advice the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Funai has not undertaken any such broad evalution. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Funai must first safety himself throughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

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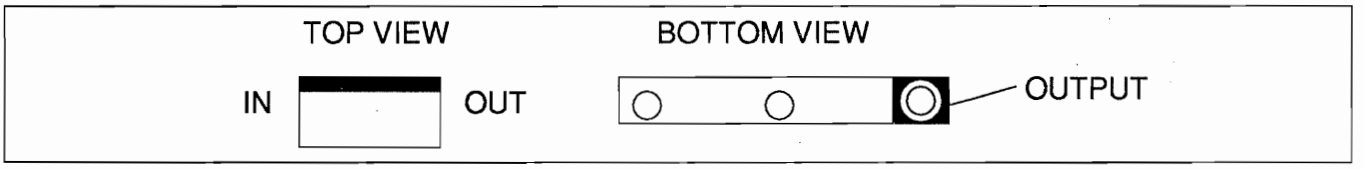
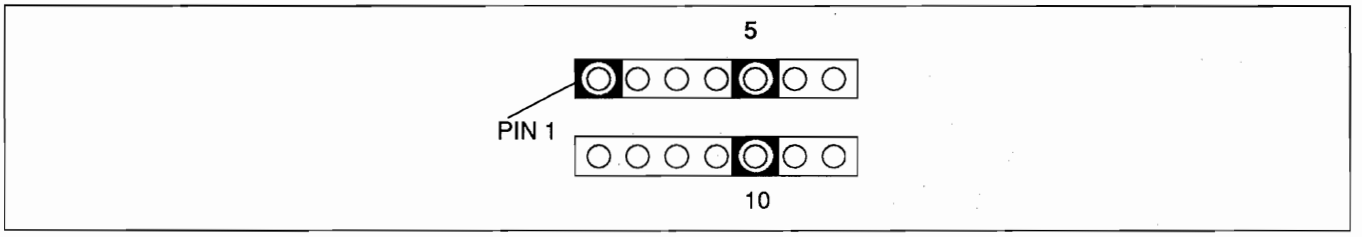
CIRCUIT BOARD INDICATIONS

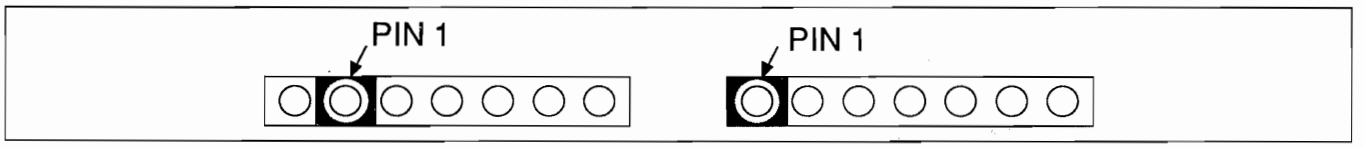
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

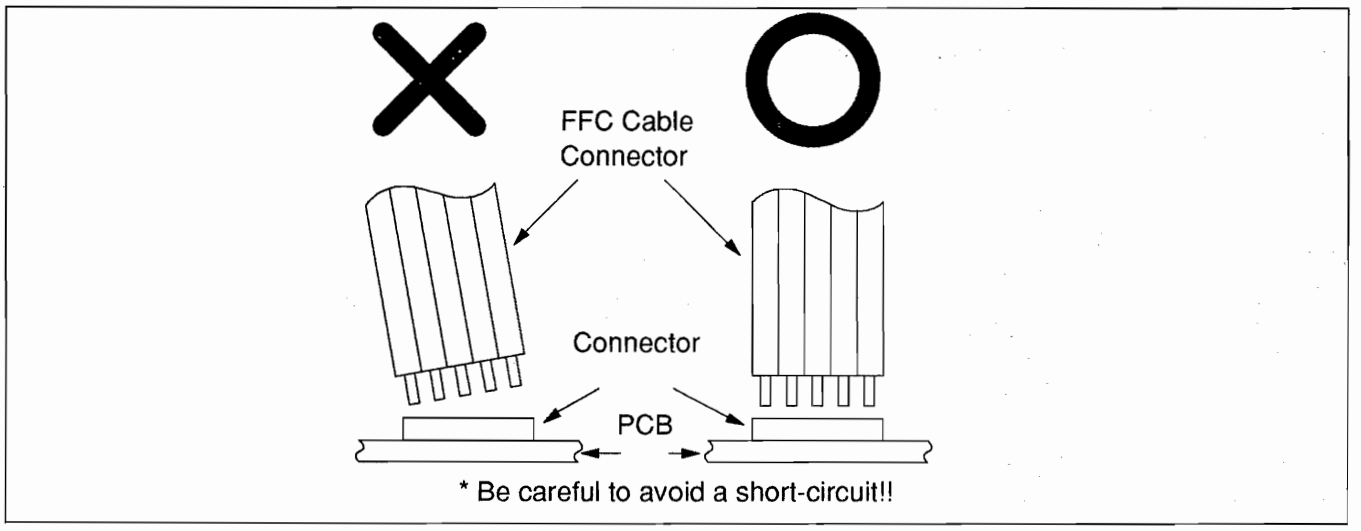


c. The 1st pin used in connectors is indicated as follows:

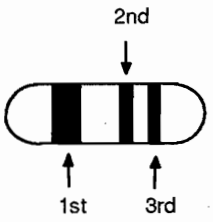


INSTRUCTIONS FOR CONNECTORS

1. When you connect or disconnect FFC cable (connector), be sure to disconnect the AC cord.
2. FFC cable (connector) should be inserted parallel into the connector, not at slant.



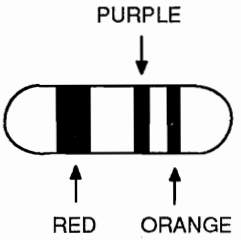
How to read the values of the cylindrical type chip components.



The widest color band must be read first for value.

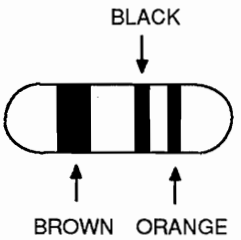
EXAMPLE :

(a) Resistor



= 273 = 27 [kΩ]

(b) Capacitor



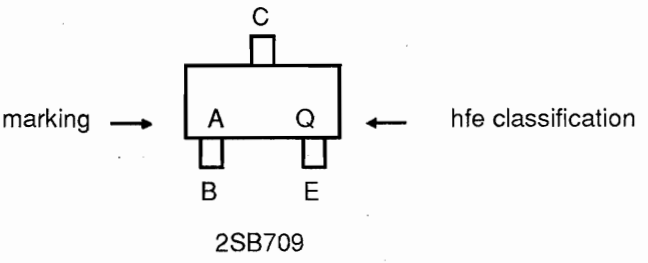
= 103 = 0.01 [uF]

CAUTION :

Once chip parts (Resistors, Capacitors, Transistors, etc.) are removed, they must not be reused. Always use a new part.

How to read the identification mark of chip transistors in this unit.

MARKING	PARTS NO.
A	2SB709
U	2SC2404
Y	2SD601
1D	2SD1328
25	DTC124EK
26	DTC144EK
2Y	2SC3757
6C	UN2113
8B	UN2212
8C	UN2213



2SB709

SIGNAL NAME TABLE

Signal name	Description
a-i	Display Segment Output
A-IN	Audio In
A-MUTE	Audio Mute
A-OUT	Audio Out
AC1.9V (F)	Alternating Current 1.9V (F)
AC120V	Alternating Current 120V
AD0~AD4	Address0~Address4
AE.H	Audio Erase Head
AFT	Auto Frequency Tuning
AL+5V	Always +5V With AC Plug Connected
AL+12V (M)	Always +12V (Motor)
AL+18V	Always +18V With AC Plug Connected
AL-28V	Always -28V With AC Plug Connected
C-ERR	Capstan Motor Error Voltage
C-FAST	Capstan Motor High Speed
C-FG	Speed Data Of Capstan Motor
C-M(+)	Capstan Motor Forward Drive
C-M(-)	Capstan Motor Reverse Drive
C-PB	Low Frequency Converted Chroma Signal At Playback
C-REC	Low Frequency Converted Chroma Signal At Record
CTL	Capstan Motor Control Pulse
D-CONT	Drum Control Voltage Signal
D-FG	Drum Motor Speed Data
D-ON	Drum Motor On Low
D-PB+5V	Delayed Playback +5V
D-PG	Drum Motor Angle Position Detect
D-REC	Delayed Record Control Low
D-V	Dummy Vertical Synchronized Pulse
DEW	Dew Detector
END-S	The End Position Detect Signal
EP-H	High At EP (SLP)
FE.H	Full Erase Head
FL-A	Cassette Insert Detection
FL-B	Cassette Out Detection
FL-C	Cassette Down Detection
GND	DC 0V
GND (M)	Ground For Motor
GND (S)	Ground For Signal
KEY-DATA 0	Key Data Input Port 0
KEY-DATA 1	Key Data Input Port 1
KEY-DATA 2	Key Data Input Port 2
KEY-DATA 3	Key Data Input Port 3
KEY-DATA 4	Key Data Input Port 4
KEY-DATA 5	Key Data Input Port 5
KEY-DATA 6	Key Data Input Port 6
LD-A	Deck Mode Position Detector Switch-A
LD-B	Deck Mode Position Detector Switch-B
LD-C	Deck Mode Position Detector Switch-C

Signal name	Description
LD-D	Deck Mode Position Detector Switch-D
LD-FWD	Loading Motor Forward
LD-M (+)	Loading Motor Forward Drive
LD-M (-)	Loading Motor Reverse Drive
LED (A)	Light Emitting Diode (A)
LP/EP-H	High At LP Mode On
MONITOR ON	Monitor On
P-CONT	Picture Control
P-ON-UN +9V	Power On Unregulated +9V
P-ON +12V	+12V At Power On
P-ON +32V	+ 32V At Power On
P-ON +5V	+5V At Power On
PAUSE	Pause
PB	Playback
PLL-CLK	Tuner PLL Data Clock
PLL-DATA	Tuner PLL Data
PLL-ENA	Tuner PLL Enable
R-SFT	Rec Safety
REC	Record
REEL	Reel
REMOCON	Remote Control Serial Signal Input
RESET	Reset
ROTE	Chroma Signal Phase Rotation Control
RF-SW	PB Video Signal Switching Pulse
S-CLK	Servo Data Timing Clock
S-DATA	Servo Signal Data
SD	Sync Detector
SP OUT (+)	Speaker Out (+)
SP OUT (-)	Speaker Out (-)
ST-S	Tape Start Position Detect Signal
SYNC	Synchronized Pulse
T-DAC	Tuning Data Control
TR-VR	Tracking Volume
UNREG +9V	Unregulated +9V
V-IN	Video Input
V-OUT	Video Output
VOL-CONT	Volume Control Signal
Y-PB	Luminance Playback Signal
Y-REC	Luminance Record Signal
3.58MHz	3.58MHz

INSTRUCTIONS FOR HANDLING SEMICONDUCTORS

Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1 Ground for Human Body

Be sure to wear a grounding band (1 Mohm) that is properly grounded to remove any static electricity that may be charged on the body.

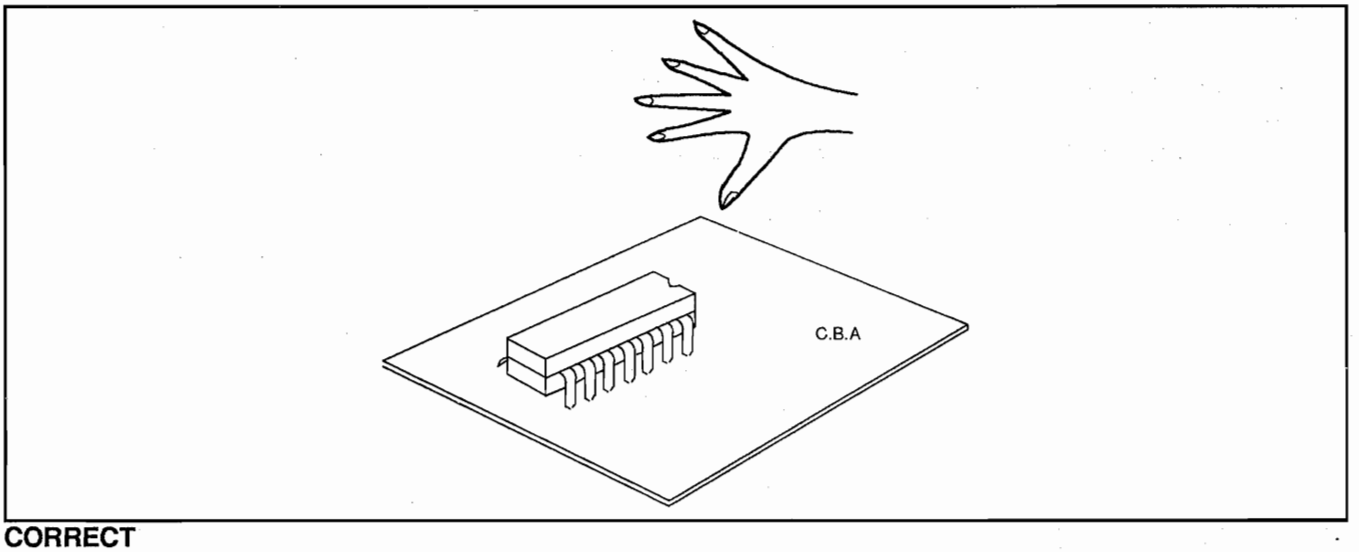
2 Ground for Work bench

Be sure to place a conductive sheet or copper plate with proper grounding (1 Mohm) on the work bench or other surface on which the semiconductors are to be placed.

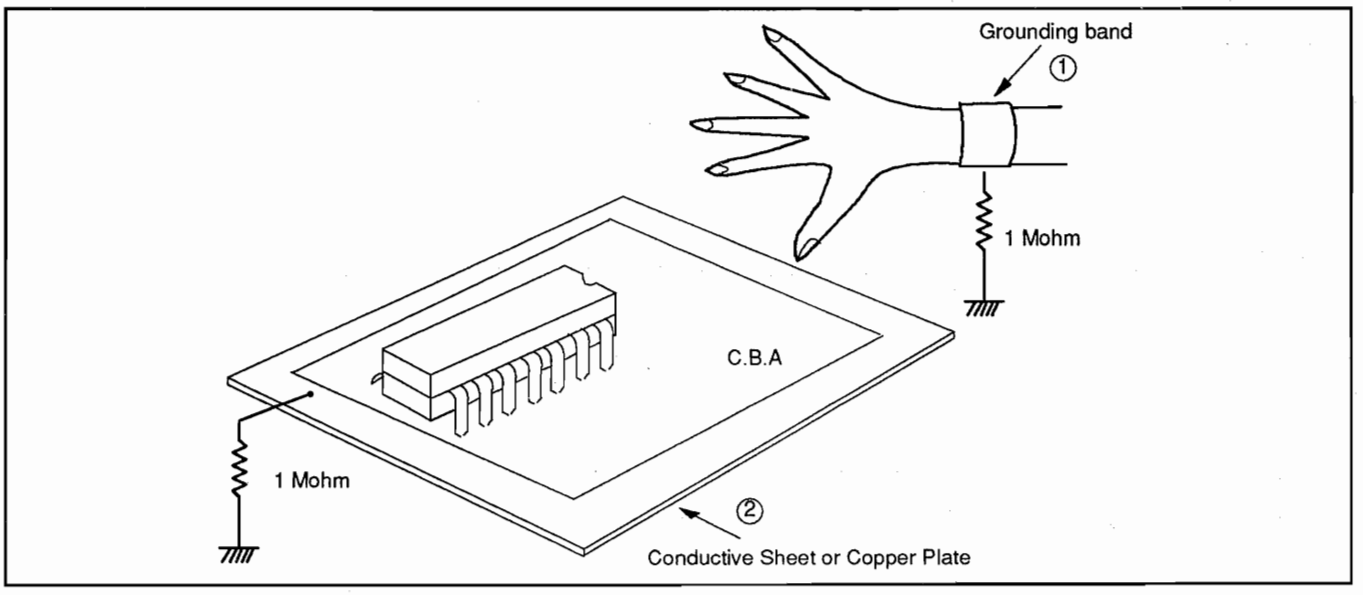
NOTE:

Because the static electricity charge on the clothing will not escape through the body grounding band, be careful to avoid contact of the pickup with clothing.

INCORRECT



CORRECT



K1800HAN

REPLACEMENT PROCEDURES FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement

a. Soldering Iron
Use a pencil-type soldering iron (less than 30 watts).

b. Solder
Eutectic solder (Tin 63%, Lead 37%) is recommended.

c. Soldering time
Do not apply heat for more than 4 seconds.

d. Preheating
Leadless capacitor must be preheated before installation.
(130℃-150℃, for about two minutes.)

Note:

a. Leadless component must not be reused after removal.

b. Excessive mechanical stress and rubbing for the component electrode must be avoided.

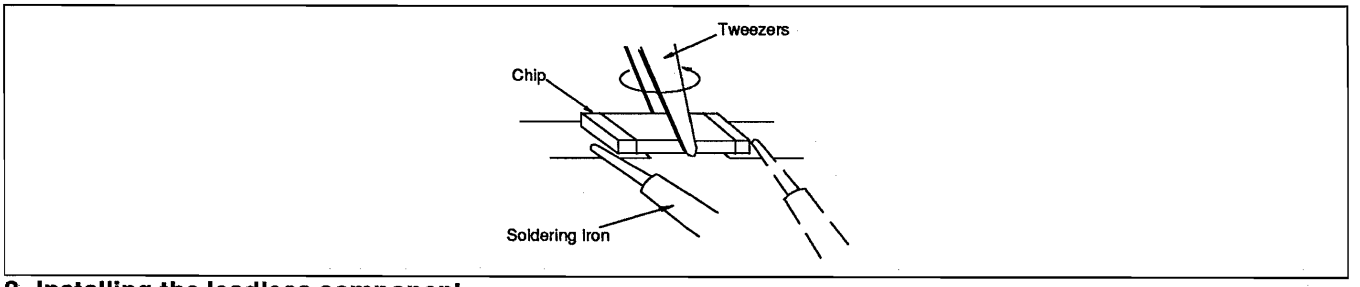
2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes has melted, remove leadless component with a twisting motion.

Note:

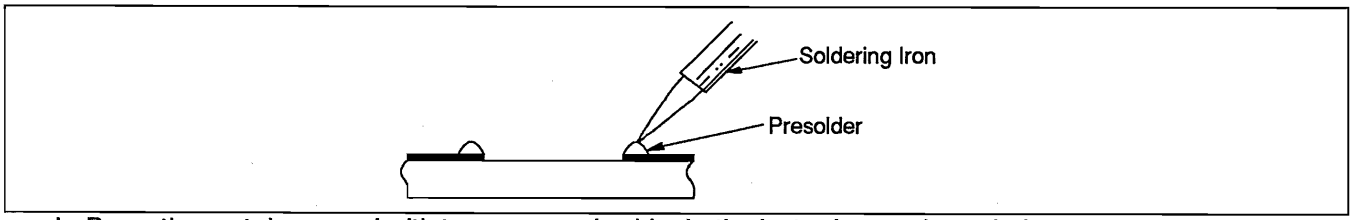
a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by the twisting action.

b. Take care not to break the copper foil on printed board.

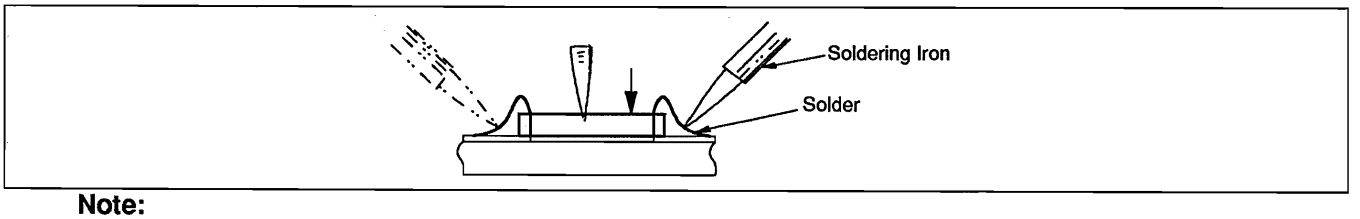


3. Installing the leadless component

a. Presolder the contact points of the circuit board.



b. Press the part downward with tweezers and solder both electrodes as shown below.



Note:

Do not glue the replacement leadless component to the circuit board.

HOW TO REMOVE / INSTALL THE FLAT PACK - IC

1. HOW TO REMOVE THE FLAT PACK - IC
(WITH HOT - AIR FLAT PACK - IC DESOLDERING MACHINE)

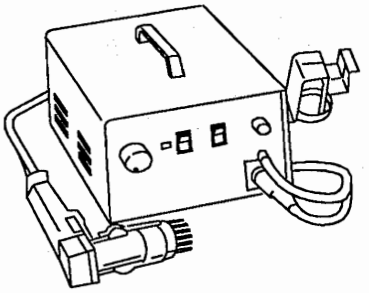


Fig. S-1-1

(1) Prepare the HOT - AIR FLAT PACK - IC DESOLDERING MACHINE, then apply hot air to Flat Pack - IC (about 5~6 seconds).

(2) Remove the Flat Pack- IC with tweezers while applying the hot air.

Caution:

1. Do not supply the hot air to the chip parts around the Flat Pack - IC for over 6 seconds, as damage may occur to the chip parts around the Flat Pack -IC.
   Put Masking Tape around the Flat Pack - IC to protect other parts from damage.

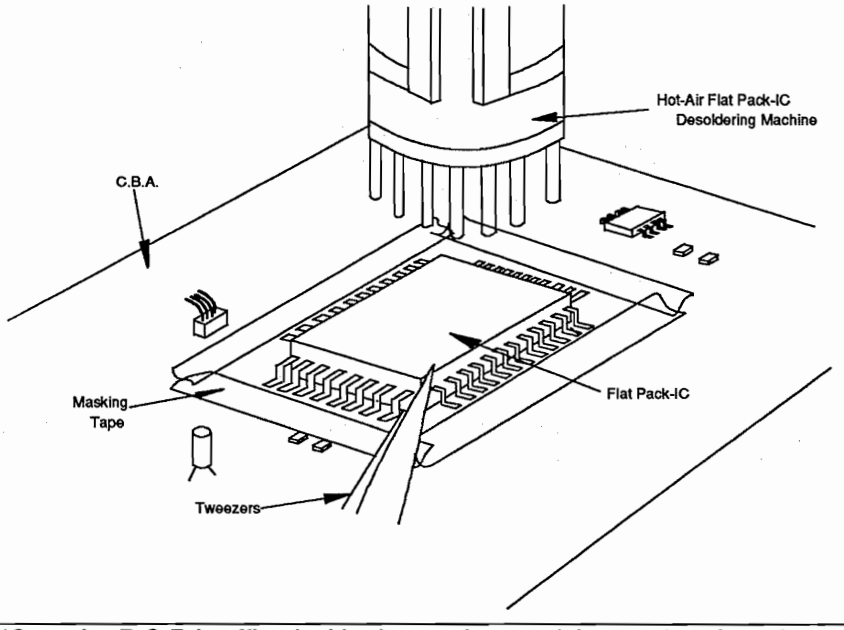


Fig. S-1-2

2. The Flat Pack - IC on the P.C.B is affixed with glue, so be careful not to break or damage the foil of each pin or solder lands under the IC when removing it.

WITH SOLDERING IRON:

(1) Using De - solder braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily.

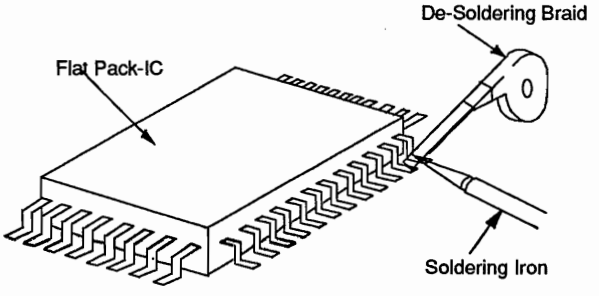


Fig. S-1-3

(2) Lift each lead of the Flat Pack - IC upward one by one using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air blower.

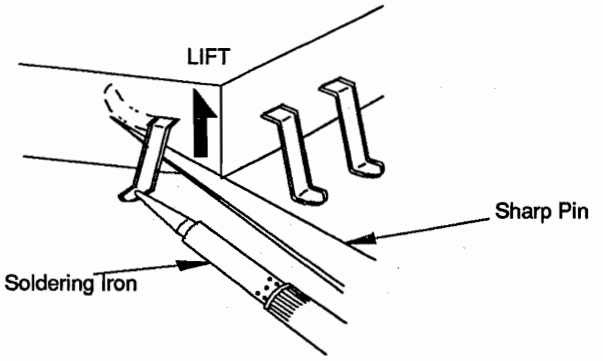


Fig. S-1-4

WITH IRON WIRE:

(1) Using De - soldering braid, remove the solder from all pins of the Flat Pack - IC. When you use solder flux which is applied to all pins of the Flat Pack - IC, you can remove it easily.

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) Pull up wire as the solder melts so as to lift the IC leads from the P.C.B. contact pads, while heating the pins using a fine tip soldering iron or hot air blower.

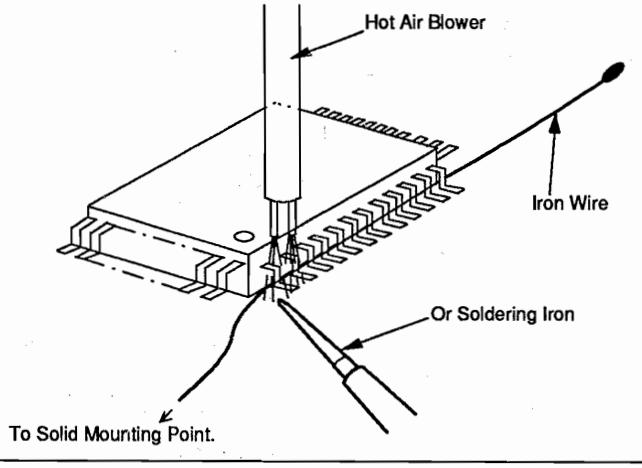


Fig. S-1-5

Note:

When using a soldering iron, care must be taken to ensure that the Flat Pack - IC is not being held by glue or when it is removed from the P.C.B., it may be damaged if force is used.

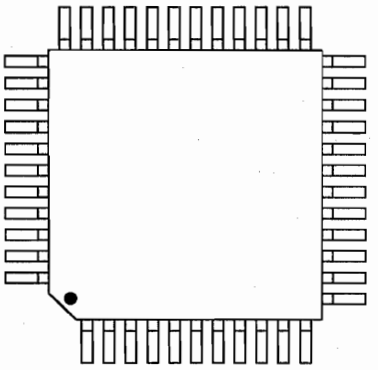
2. HOW TO INSTALL THE FLAT PACK - IC

(1) Using a De - solder braid, remove the solder from the foil of each pin of the Flat Pack - IC on the P.C.B. so you can install a replacement Flat Pack - IC more easily.

(2) The "●" mark on the Flat Pack - IC indicates pin 1. (See Fig. S-1-6) Make sure this mark matches the 1 on the P.C.B when positioning for installation. Then pre - solder the four corners of the Flat Pack- IC (See Fig.S-1-7)

(3) Solder all pins of the Flat Pack - IC. Make sure that none of the pins have solder bridges.

Example:



Pin 1 of the Flat Pack-IC is indicated By a " ● "mark.

Fig. S-1-6

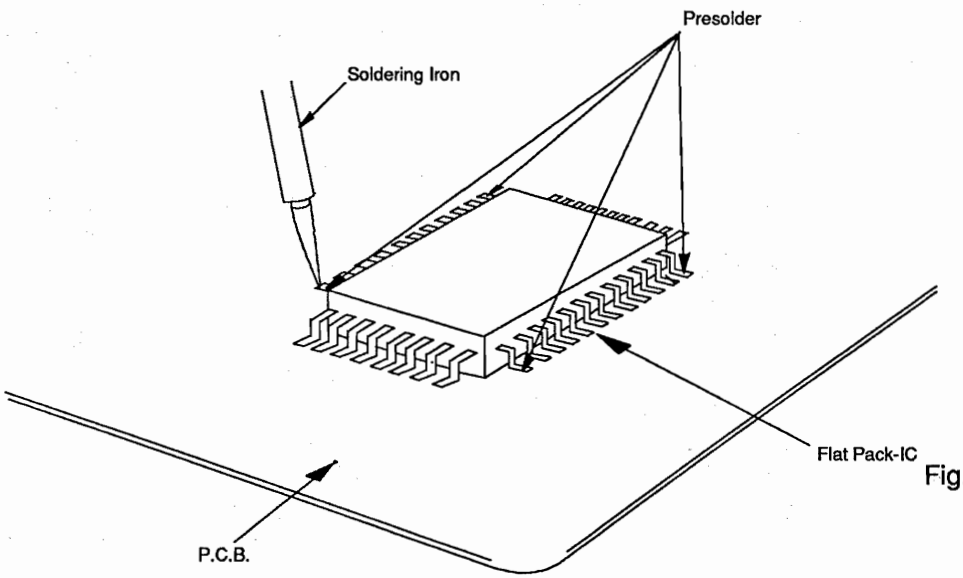


Fig. S-1-7

SPECIFICATIONS*

A) System

1) CRT:	14" (13V) , Inline gun, 90° Def.
2) Color:	NTSC-M
3) Receiving channels:	[VHF]....2~13ch, [UHF]....14~69ch
<155 channel>	[CATV] [VHF].....5A [MID band]....A~I,A1~A5 [SUPER band]..J~W [HYPER band] ....W+1~W+58
4) Tuning system:	PLL synthesizer system
5) Controls (* indicates features located in compartment)	
Power:	Push switch
Stop/Eject:	Push switch
*Channel:	2-Push switches (up/down)
*Volume:	2-Push switches (up/down)
*Play:	Push switch
*Fast forward:	Push switch (Picture search)
*Rewind:	Push switch (Picture search)
*Still/Pause:	Push switch
*Record:	Push switch
*QTR start:	Push switch
*QTR length:	Push switch
*Monitor:	Push switch
*Tracking:	Rotary
*Tape speed:	Slide switch (SP/LP/SLP)
*Preset:	Push switch
*Auto memory:	Push switch
*Add:	Push switch
*Erase:	Push switch
*Band:	Slide switch (TV/STD/HRC)
*Contrast:	Rotary (W/Center click)
*Color:	Rotary (W/Center click)
*Tint:	Rotary (W/Center click)
*Brightness:	Rotary (W/Center click)
*Auto repeat:	Slide switch
6) Connectors & Jacks	
Antenna:	75 ohm F connector
Video/Audio In:	2-RCA jacks (for recording)
Earphone Jack:	3.5 mm jack
7) Degauss:	Automatic Degaussing
8) Speaker:	3" Round type
9) Audio output power:	0.8 W

B) VCR

1) Recording system:	Rotary two-head helical scan system HQ system
2) Loading system:	Front loading
3) Video signal:	NTSC 525 lines,60Hz
4) Tape format:	Width 1/2",1 Audio track
5) Rec/Play time SP:	2 hours 40 minutes
[T-160] LP:	5 hours 20 minutes
SLP:	8 hours
6) Tape speed SP:	33.40 mm/sec
LP:	16.67 mm/sec
SLP:	11.12 mm/sec
C) IR Remote Control:	22 Pushbutton handset (10 keys, Power, Ch. up/down, Vol. up/down, Play, 2-Rec, FF, Rew, Stop, Still/Pause)
D) Indicators:	Flourescent tube (Rec, Play, QTR, Length, Tape-In, Start, Channel, Dew, FF, REW)

E) Mechanical

1) Dimensions:	W362mm X D366mm X H399mm
2) Cabinet:	All plastic cabinet
3) Weight:	13.5 Kg
4) Packing weight:	16.0 Kg

F) Power supply

1) Rating:	AC 120V/60Hz
2) Consumption:	85 W
3) AC cord:	6 ft PVC cord

G)Miscellaneous

1) Head life time:	1000H (Change tape by 200H)
2) Regulations:	UL1410, FCC Part 15

H) Accesories

1) Remote control handset
2) 2-AA batteries for remote
3) VHF antenna
4) Instruction booklet
5) Matching adaptor

*** Specifications are subject to change without notice.**

SPECIFICATIONS* [VCR UNIT]

Test Items	Mode	Cond.	Unit	Nominal	Limit	Remarks
1. VIDEO						
Video output (PB)	SP	R/P	Vp-p	2.0	2.0 ± 0.2	F8-A
Video output (R / P)	SP	R/P	Vp-p	2.0	2.0 ± 0.2	
Video S / N Y (R / P)	SP	R/P	dB	48	40	
Video color S / N AM (R / P)	SP	R/P	dB	44	38	
Video color S / N PM (R / P)	SP	R/P	dB	40	26	
Resolution (R / P)	SP	PB	line	230	220	F8-M
2. SERVO						
Jitter at Low (R / P)	SP	R/P	μsec	0.05	0.2	F8-A
Wow & Flutter (R / P) WTD	SP	PB	%	0.18	0.35	
3. AUDIO						
Output (EE)	SP	R/P	W	0.9	0.7	
Output (R / P)	SP	R/P	W	0.9	0.7	
S / N (R / P)	SP	R/P	dB	45	40	
Distortion (R / P) input -10dBs	SP	R/P	%	1.3	5.0	
Freq. Resp. (R / P) at 200Hz	SP	R/P	dB	-2.0	-2.0± 5.0	
(input : -20dBs) 8kHz			dB	0	0± 6	
4. TUNER				T V	CATV / HRC	
Channel V-Low	E-E		ch	2~6 ch	2~4,5A,5,6,A-5~A-1,A,B	
V-High			ch	7~13ch	C~I,7~13,J~W+11	
UHF			ch	14~69 ch	W+12~W+58	
Video output (10 ch)	E-E		Vp-p	2.0	2.0 ± 0.4	VIDEO (87.5% dev) AUDIO (1KHz 100%dev)
Video S / N (10 ch)	E-E		dB	46	40	
Audio output (10 ch)	E-E		W	0.8	0.6	
Audio S / N (10 ch)	E-E		dB	44	40	

*** Specifications are subject to change without notice.**

SAFETY CHECK AFTER SERVICING

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. CLEARANCE DISTANCE

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. See Figure 1.

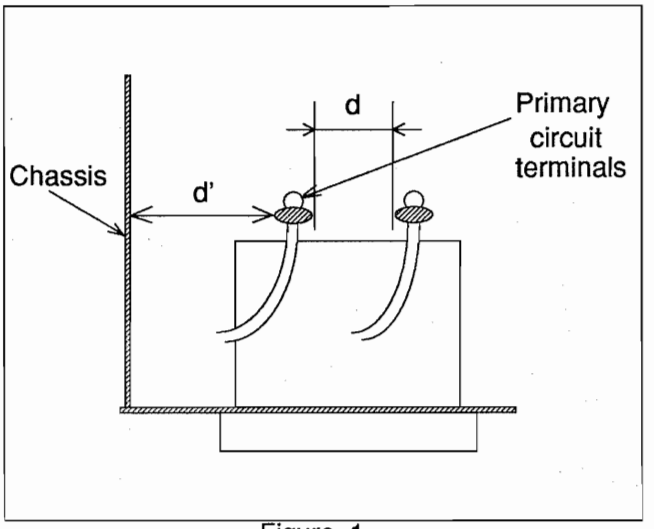


Figure 1

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
110 to 130 V	USA	≥3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

2. LEAKAGE CURRENT TEST

Confirm specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method : (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 2 and following table.

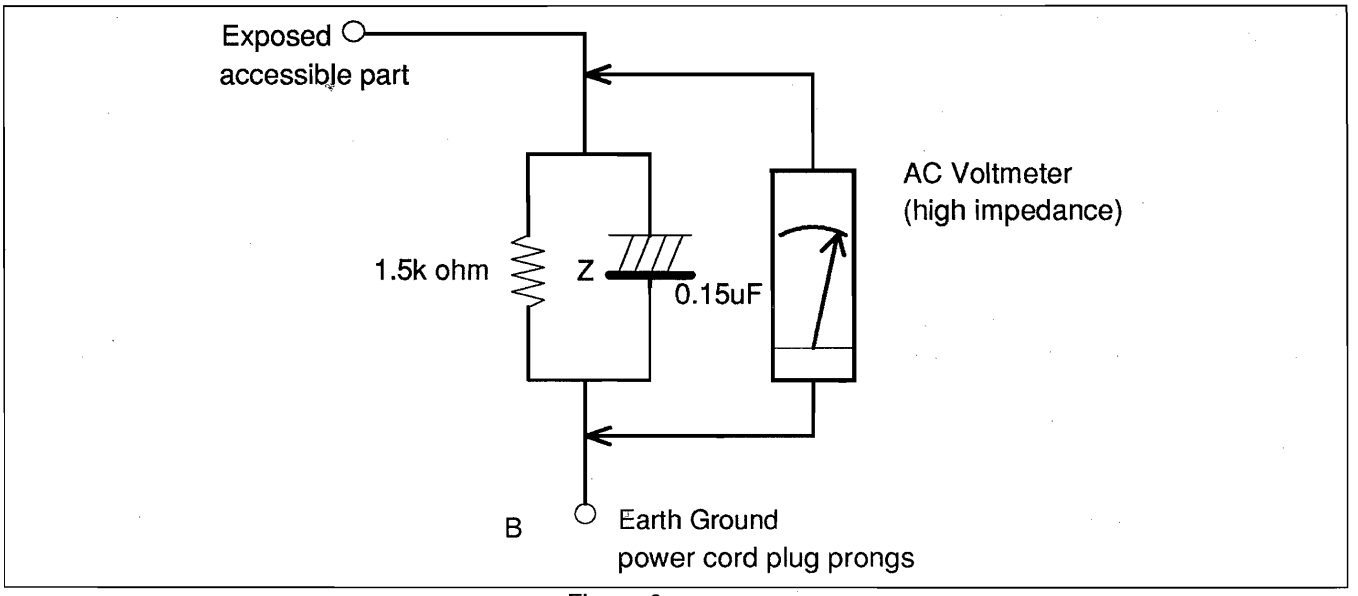


Figure 2

Table 2:

Leakage current ratings for selected areas.

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (B) to:
110 to 130 V	USA	0.15μF CAP. & 1.5kΩ RES. connected in parallel	i≤0.5mA rms	Exposed accessible parts

Note:

This table is unofficial and for reference only. Be sure to confirm the precise values.

IMPORTANT SAFETY PRECAUTIONS

Prior to shipment from the factory, our products are strictly inspected for recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

PRECAUTIONS DURING SERVICING

1. Locations requiring special caution are denoted by labels and inscribed on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the symbol ⚠ are critical for safety. Replace only with specified part numbers.

3. Use specified internal wiring. Note especially :
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

4. Use specified insulating materials for hazardous live parts. Note especially :
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors

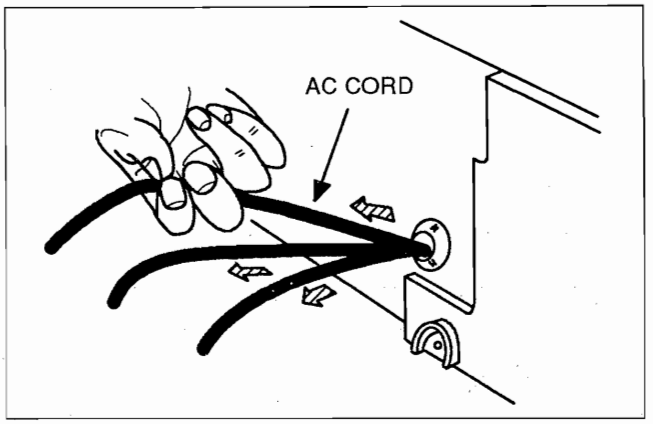
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely around the terminals before soldering.

6. Observe that wires do not contact heat producing parts (heat sinks, oxide metal film resistors, fusible resistors, etc.)

7. Check that replaced wires do not contact sharp edged or pointed parts.

8. When a power cord has been replaced, check that 10-15 kg (23-34.5lbs) of force in any direction will not loosen it.

9. Also check areas surrounding repaired locations.



STANDARD MAINTENANCE

SERVICE SCHEDULE OF COMPONENTS

○:Check ●:Change

Deck		Periodic Service Schedule			
Ref. No.	Parts Name	1,000 H	2,000 H	3,000 H	4,000 H
2	Upper Drum	○	●	○	●
134	Pinch Roller (A)		●		●
171	Capstan Motor Assembly		●		●
229	Clutch Assembly		●		●
281	LM Assembly (Loading Motor)			●	
173	Main Belt		●		●
196	Back Tension Band		●		●
233	Drive Belt		●		●
251	Brake Shoe		●		●
285	Loading Belt		●		●
373	Front Loading Belt		●		●
14, 19	Drum Ground			●	
82	ACE Head			●	
92	Full Erase Head			●	
121	Reel Assembly			●	

Note:

1. Clean all parts for the tape transport (Upper Drum with video head / Pinch Roller Audio Control Head / Full Erase Head) using Isoprophyl Alcohol 91%.
2. After cleaning up the parts, perform all DECK ADJUSTMENTS.
3. All Reference Numbers listed above refer to parts shown on Deck Exploded View .

CLEANING

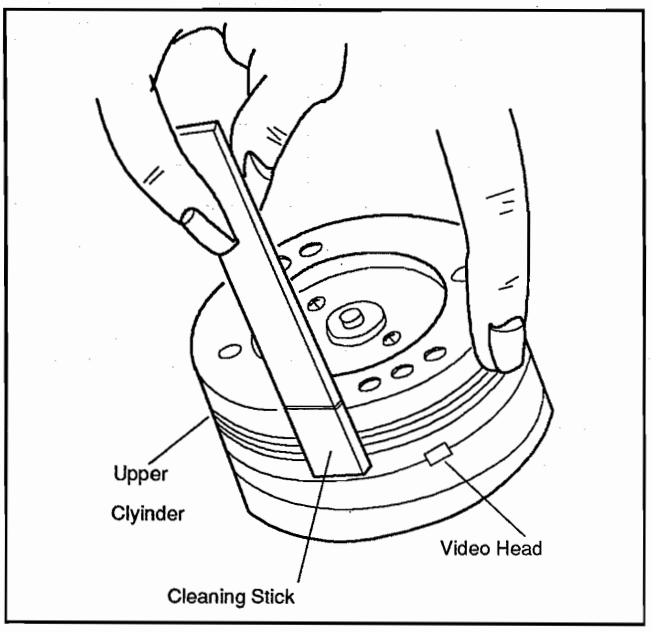
1. Cleaning of Video Head (using a Head Cleaning Stick).

Procedure

1.Remove the top cabinet.
2.Put on a glove (thin type) to avoid touching the upper drum and lower drum with bare hand.
3.Put a few drops of Isoprophyl alcohol 91% on the Head Cleaning Stick, and by slightly placing it against the head tip, allow the upper drum to turn to the right and left.

NOTE:

1.The video head is made of a very hard material, but since it is very thin, avoid cleaning it vertically.
2.Wait for the cleaned part to dry out before operating the unit or damage will occur.
3.Do not reuse the stained Head Cleaning Stick.



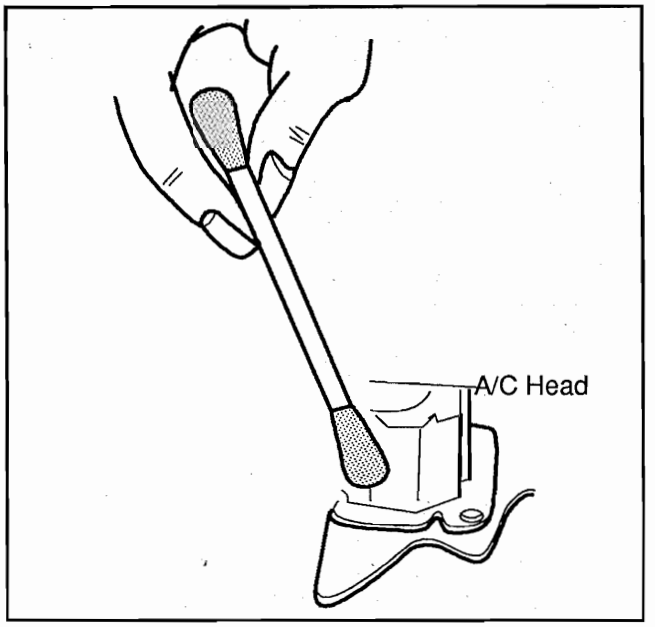
2. Cleaning of Audio Control Head (using a Q-Tip).

Procedure

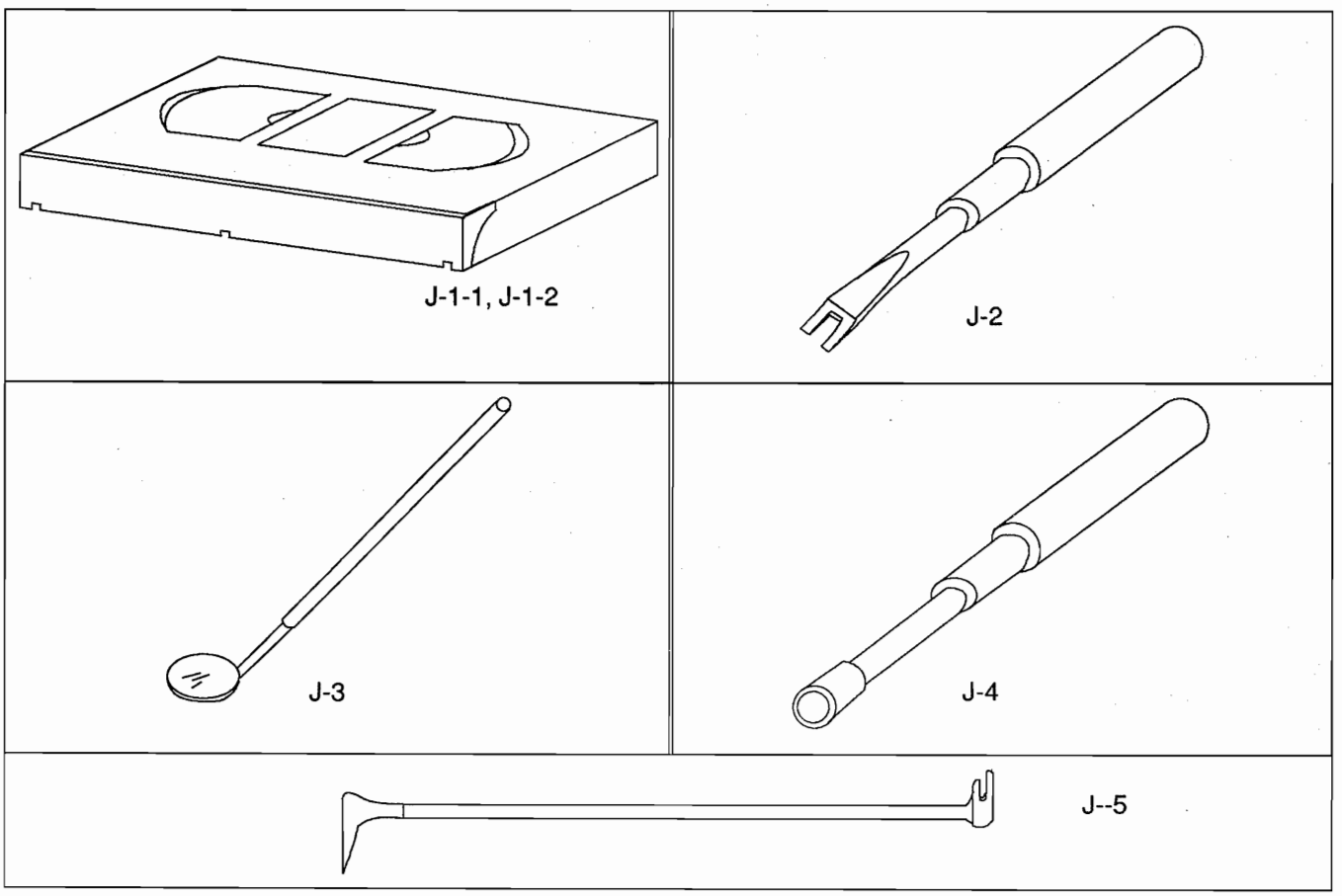
1.Remove the top cabinet of VCR unit.
2.Put a few drops of Isoprophyl alcohol 91% on the Q-Tip, clean up the audio control head, being careful not to damage the upper drum and other tape running parts.

NOTE:

1. Avoid cleaning audio control head vertically.
2. Wait for the cleaned part to dry well, before operating the unit or damage will occur.



SERVICE FIXTURES AND TOOLS



Ref. No.	Name	Adjustment
J-1-1	Alignment Tape (F8A)	Audio Output Adjustment
J-1-2	Alignment Tape (F8N)	FM Output Level / Azimuth Adjustment
J-2	Special Driver (FSJ-0001)	Control Head / Tape Guide Height
J-3	Mirror	Tape Transportation Check
J-4	Box Driver, Mx3 (FSJ-0005)	Guide Pole / A/C Head Height
J-5	Torque Wrench (FSJ-VHT-063)	Back Tention

PREPARATION FOR USE

CHANNEL MEMORY PROGRAMMING

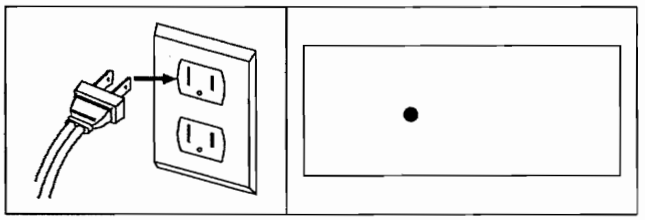
You can program the tuner to scan only the channels you receive in your area.

* **Programed channels are erased when you disconnect the power cord or the power failure occur.**

AUTOMATIC MEMORY-IN

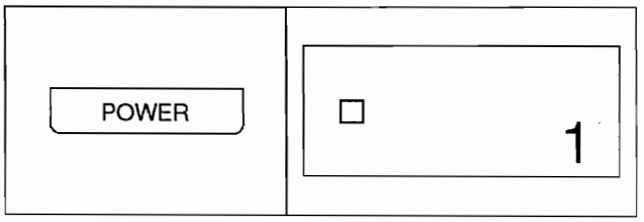
1

Connect the power cord to a standard AC outlet.



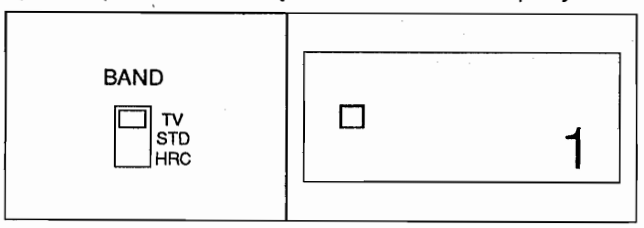
2

Press POWER button to on.



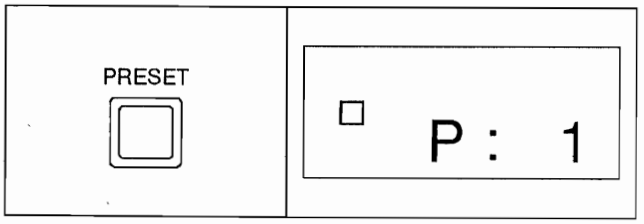
3

Set BAND selector switch to the same position as your receiving sources. If you cannot determine your cable system, please contact your local cable company.



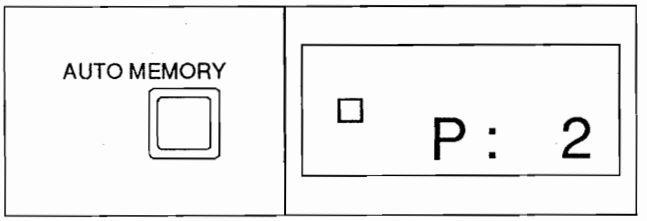
4

Press PRESET button. The "P" indicator will appear.



5

Press AUTO MEMORY button.
The channel number indicator will begin to change from 2 and up and VCR tuner will begin to search up for the available stations in your area.



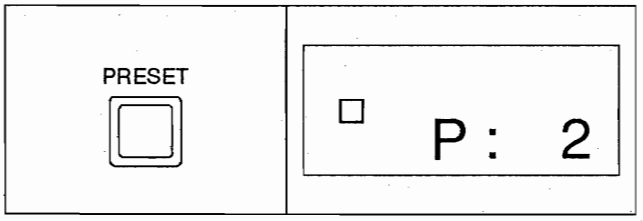
Now, all channels you receive in your area are stored in memory.

MANUAL MEMORY-IN

* **To add desired channels into the memory, follow these steps.**

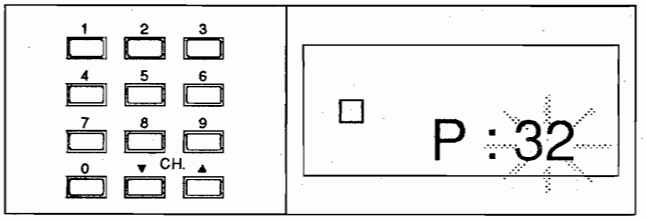
1

Press PRESET button. The "P" indicator will appear.



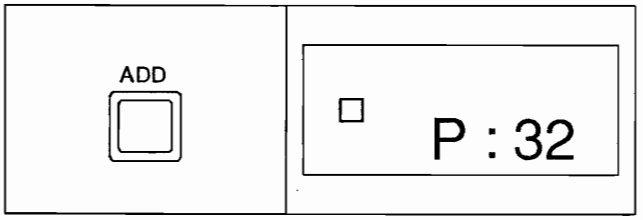
2

Select the desired channel number with remote control NUMERICAL keys. You must precede one-digit channel numbers with a zero (02, 03, 04 and so on). The channel indicator will flash.



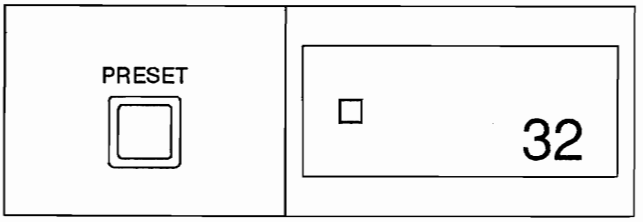
3

Press ADD button.



4

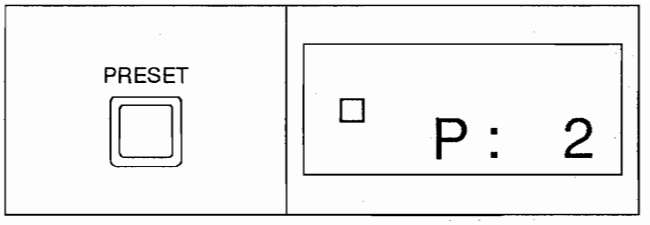
Press PRESET button to return to original mode.



To ERASE PRESET CHANNELS

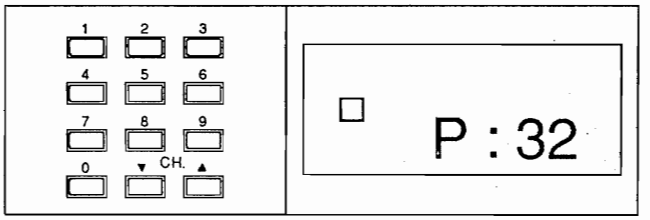
1

Press PRESET button.



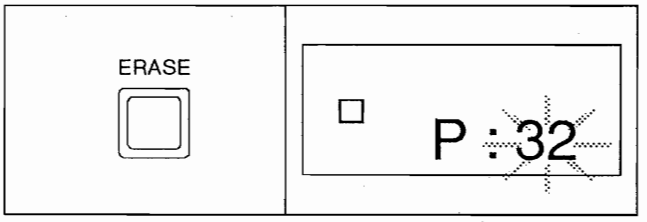
2

Select the desired channel number with remote control NUMERICAL keys. You must precede one-digit channel numbers with a zero (02, 03, 04 and so on).
(Example: Channel 32)



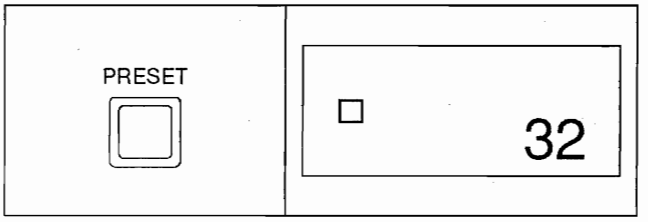
3

Press ERASE button. Channel indicator will flash.



4

Press PRESET button. The channel indicator will stop flashing. Press channel UP or DOWN button to erase the channel number. Now, channel 32 is erased.
Repeat steps [1] to [4] for each program you want to erase.

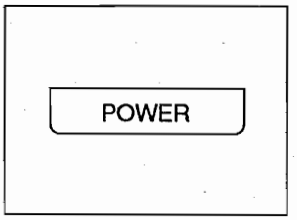


OPERATION

T.V. OPERATION

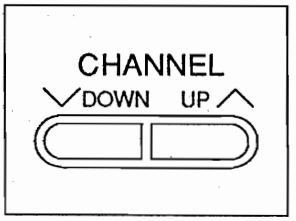
1

Push POWER button to ON.



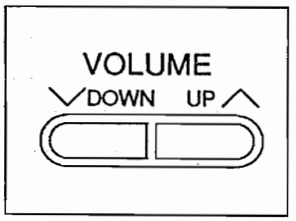
2

Select the desired channel.



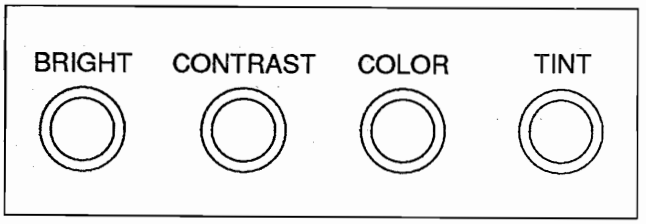
3

Adjust the VOLUME to desired listening level using the VOLUME UP and DOWN buttons



4

Adjust picture controls for a natural looking image (located on the inside of control door).



TINT (HUE)

Adjust the tint control as follows: If facial tones are too green, rotate the tint control counter-clockwise. If facial tones are too purple, rotate the control clockwise.

COLOR

Rotate the color control to change the color intensity. If color appears weak and pale, rotate the color control clockwise. If the color appears flushed & brilliant, rotate the control counter-clockwise.

BRIGHT

It controls the brilliance of the picture, to increase brightness. rotate the control clockwise. To decrease brightness, rotate the control counter-clockwise.

CONTRAST

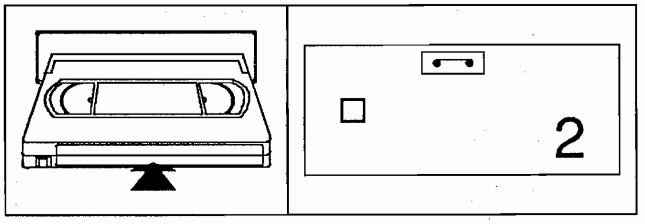
Correct brightness and contrast settings are important to obtain a natural image. To increase the contrast, rotate the control clockwise. To decrease contrast,rotate the control counter-clockwise.

The contrast control will adjust the contrast, brightness and color intensity simultaneously, in proper ratio.

VIEWING AND RECORDING THE SAME PROGRAM

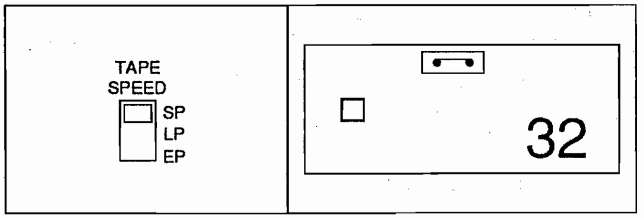
1

Insert a cassette with erasure prevention tab intact. The unit will turn on automatically.



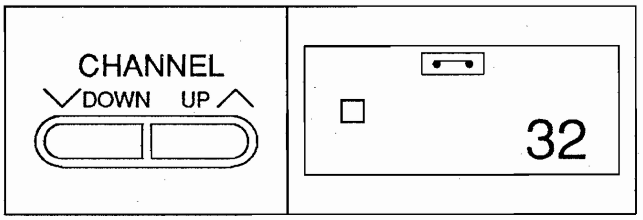
2

Select the desired tape speed. (SP/LP/EP)



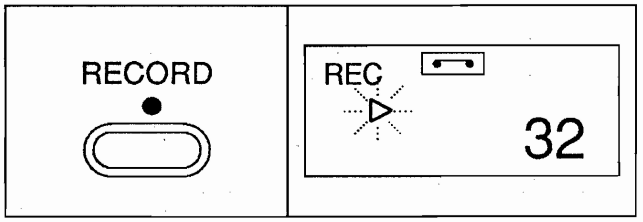
3

Select the channel to be recorded.



4

Press RECORD button.



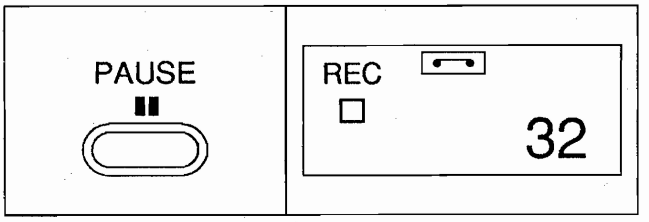
If you want to edit out some material while you are recording.

5

Press PAUSE button.

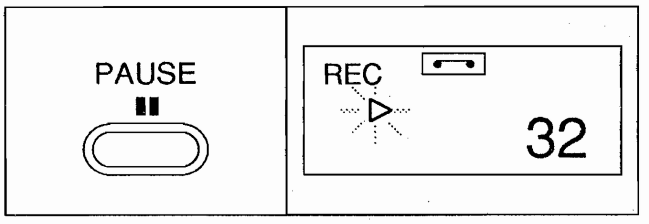
Note:

To prevent tape damage, avoid leaving the VCR in the pause mode for more than five minutes. After five minutes, the VCR will automatically switch to the RECORD mode.



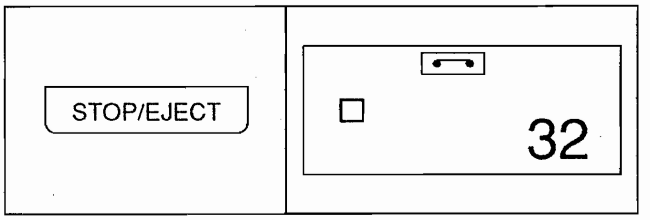
6

Press PAUSE button again to resume recording.



7

Press STOP button when recording is completed.



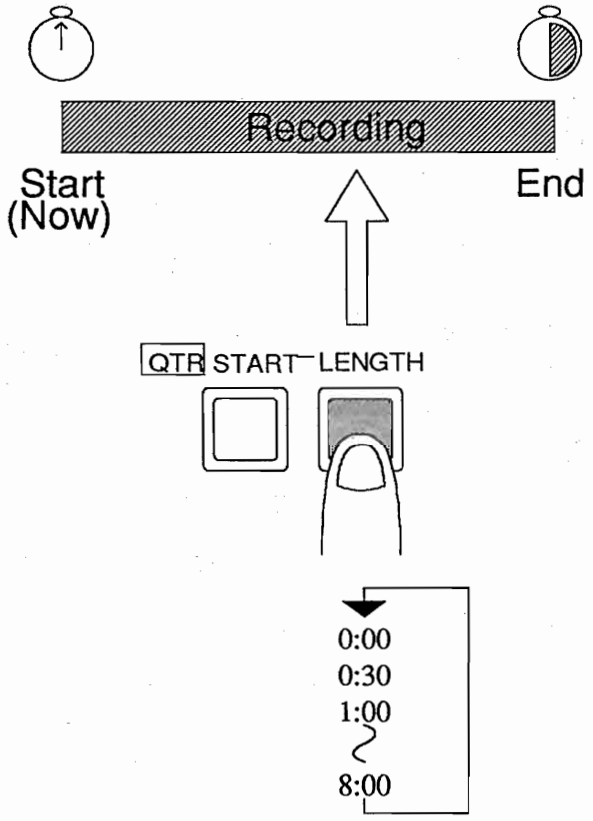
FOR A BETTER UNDERSTANDING OF THE QTR

QUICK TIMER RECORDING

Note: You may set the VCR to start and stop recording the channel being watched.

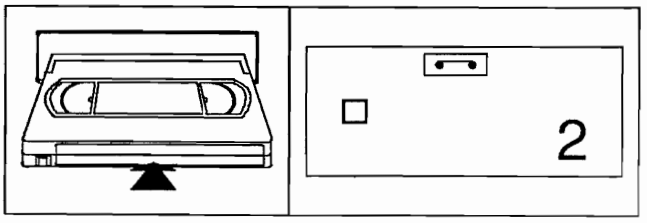
INSTANT QTR

This is a very easy and convenient way to immediately start recording a TV Program you happen to be watching.



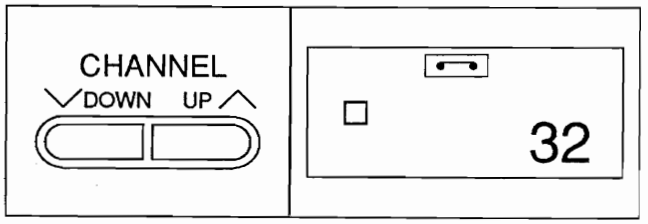
1

Insert a cassette tape (with erasure prevention tab intact). The VCR will turn on automatically.



2

Select the TV program to be recorded.

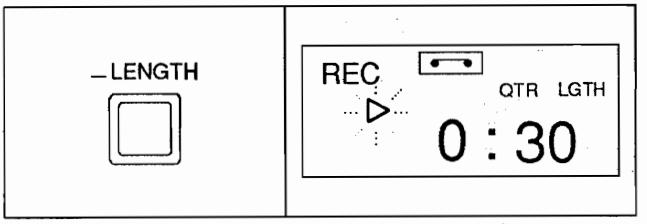


3

Press QTR "LENGTH" button twice.
(This will give you 30 minutes of recording time)

NOTES:

* To stop the QTR operation, press STOP button.
* There is no need to press START button.



4

Each time you push QTR "LENGTH" button you will extend recording time by 30 minutes at a time up-to 8 hours (or to the end of the tape).

QTR LENGTH TABLE

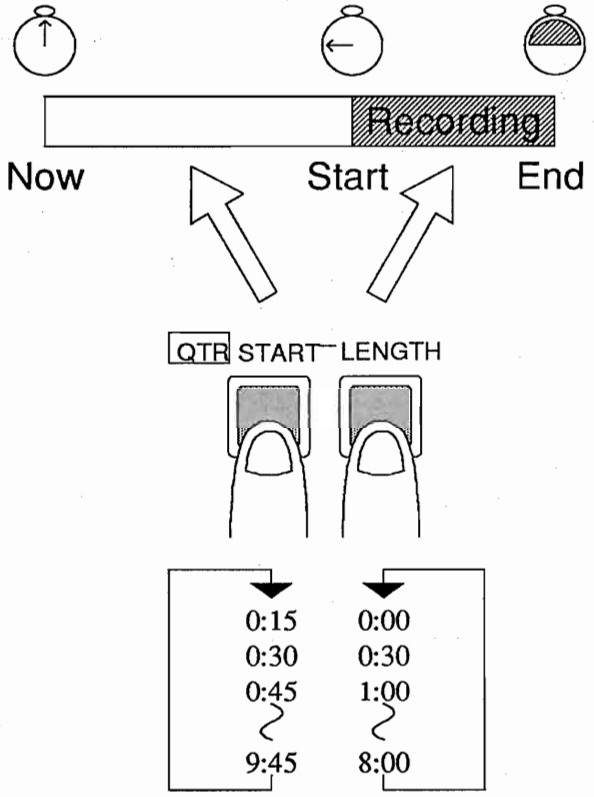
Push(es)	DISPLAY	LENGTH
1push	0:00	0 minute
2 pushes	0:30	30 minutes
3 pushes	1:00	60 minutes
4 pushes	1:30	90 minutes
5 pushes	2:00	120 minutes
6 pushes	2:30	150 minutes
7 pushes	3:00	180 minutes
8 pushes	3:30	210 minutes
9 pushes	4:00	240 minutes
10 pushes	4:30	270 minutes
11 pushes	5:00	300 minutes
12 pushes	5:30	330 minutes
13 pushes	6:00	360 minutes
14 pushes	6:30	390 minutes
15 pushes	7:00	420 minutes
16 pushes	7:30	450 minutes
17 pushes	8:00	480 minutes
18 pushes	0:00	0 minutes

STAND-BY QTR

This STAND-BY QTR enables you to select a starting time at every 15 minutes of every hour within the next 9 hour 45 minutes and length of recording up-to 8 hours (or to the end of the tape).

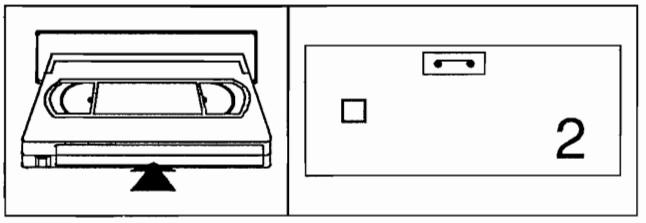
Note: Before doing this procedure please read instructions carefully.

* After doing step [3] you have only 5 seconds to do step [4] or step [3] will be canceled. In this case, repeat step [3] again.



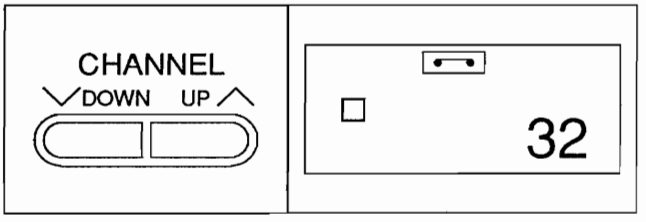
1

Insert a cassette tape (with erasure prevention tab intact). The VCR will turn on automatically.



2

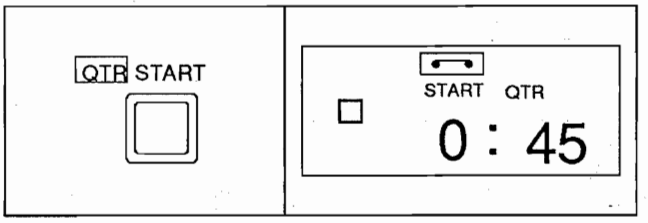
Select the TV program to be recorded.



3

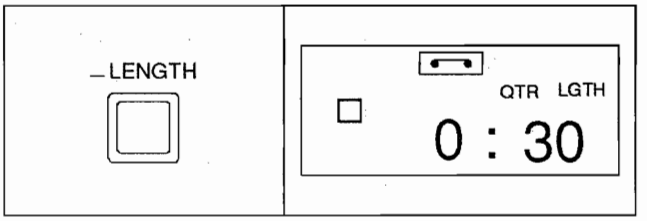
Press QTR "START" button to select starting time. Every time you push the starting time it will advance by 15 minutes.

Example: QTR will start after 45 minutes by pressing QTR START button.



4

While display indicates your desired starting time, Press QTR "LENGTH" button to obtain desired recording time period (length). VCR power will go off.



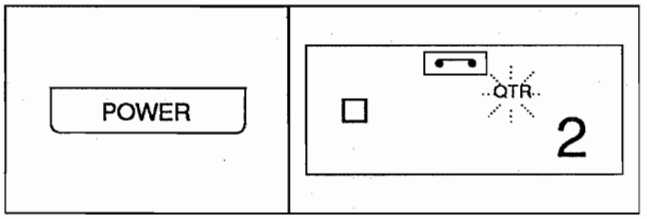
Notes:

* When the QTR is ON, the VCR will not respond to any commands (only cancel procedure).
* When you want to watch the TV after setting the STANDBY QTR, press POWER button to TV on.
* Press POWER button to TV off before start time, STANDBY QTR will execute.
* If you watch the TV, exceeding start time, STANDBY QTR will be cancelled.
* The timer on this display counts down as the recording progresses.
* Each time you push QTR "LENGTH" button you will extend recording time by 30 minutes at a time up-to 8 hours (or to the end of the tape).
* While QTR is operated, recording will stop in approximately 8 seconds by pushing QTR LENGTH button 18 times-0 minutes- 0:00 reading. And then, power is off.

TO CANCEL QTR

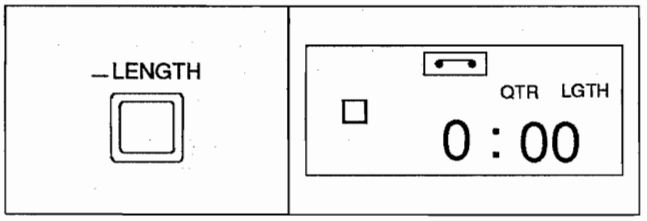
1

Press POWER button. QTR indicator will flash.



2

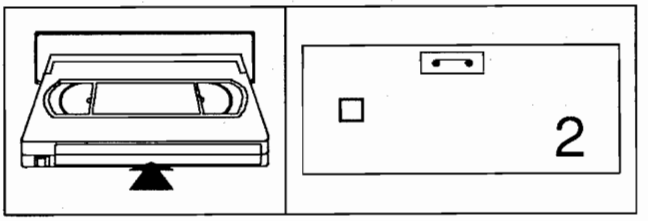
Press QTR LENGTH button until 0:00 appears on the LCD display. After 8 seconds, the channel indicator is displayed. Now QTR is cancelled.



PLAYBACK

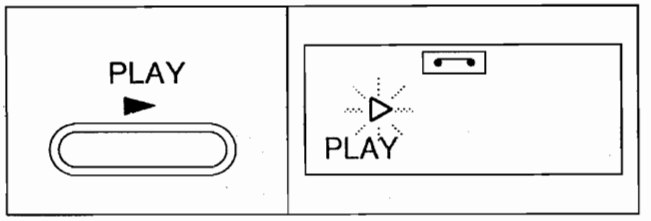
1

Insert a pre-recorded tape.
The VCR will turn on automatically.



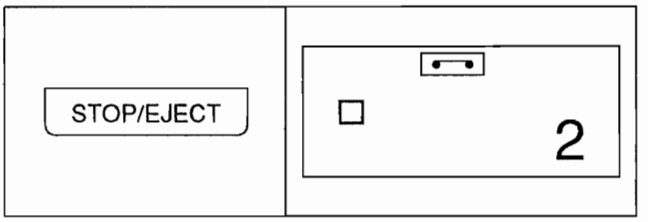
2

Press PLAY button.
If a cassette tape is inserted without its safety tab in place, VCR starts playback automatically.



3

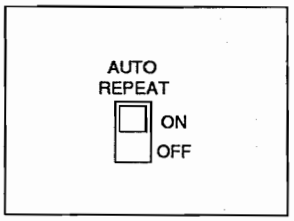
Press STOP button when playback is completed.



AUTO REPEAT PLAYBACK

This unit has an auto repeat playback function that allows you to repeat a tape indefinitely without having to continue to push the PLAY button.

To start auto repeat playback, simply set the AUTO REPEAT switch to on.



AUTO REWIND

When the end of a tape is reached during recording, playback, or fast-forward, the tape will automatically rewind to the beginning.

Note:

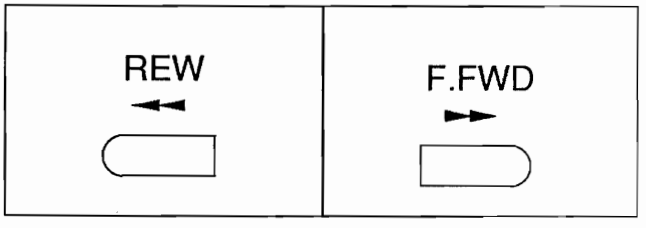
* The tape will not auto-rewind during QUICK REC.

CUE AND REVIEW (VISUAL SEARCH)

You may view the video program at a high speed in either a forward or reverse direction. When in the play mode, press F.FWD button to view the tape at a fast speed in the forward direction. To view the tape at a fast speed in the reverse direction, press REW button. The sound will be muted. This feature is used to find a particular section of a tape.

Notes:

* When video searching a pre-recorded tape, it may cause the noise bars (white lines) to move vertically. Also, the picture color fluctuates on and off. This is not an indication of VCR trouble.
* You will get best results when playing back tapes that were recorded in the EP mode.
* To return to normal playback, press PLAY button.
* The picture will not be as good as normal during CUE and REVIEW.



2 STEP SEARCH

This VCR has 2 speeds of visual search with tapes recorded in LP or EP (SLP) mode.

1) Push the button for F.FWD or REW during the playback, to view the picture at a faster than normal speed.

2) If you want to view the picture at faster than above 1), you can view the picture by holding down the F.FWD or REW button during playback.

STILL FRAME DURING PLAYBACK

If you press PAUSE button during playback with tapes recorded in EP mode, the picture will "freeze" on the screen. You may use this feature to study details of a particular scene. Press PLAY button again to continue playback. If you use the PAUSE button during playback with tapes recorded in the SP or LP mode, it may cause the noise bars to appear more than with tapes recorded in the EP mode. This is not an indication of VCR trouble.

Note:

The VCR will automatically switch to the Stop mode, if it is left in the PAUSE/STILL mode for more than five minutes.

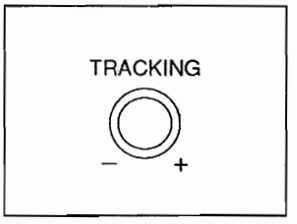
NOISE CANCELLING

If you use the PAUSE button to freeze the picture during playback, usually there will be video "noise" lines on the screen. This is normal, however, this VCR has a special feature that allows you to reposition or reduce the lines. Each time you press the PAUSE button the lines will change position on the screen.

This enables you to see the picture in its entirety without distracting noise lines.

TRACKING CONTROL KNOB

This knob is used to help eliminate video "noise" (lines and dots on the screen). For tapes recorded on your VCR, the center setting is usually best. Tapes recorded on other VCRs may required adjustment. If you encounter video "noise" during playback adjust the TRACKING knob to the right or left to obtain the best picture.

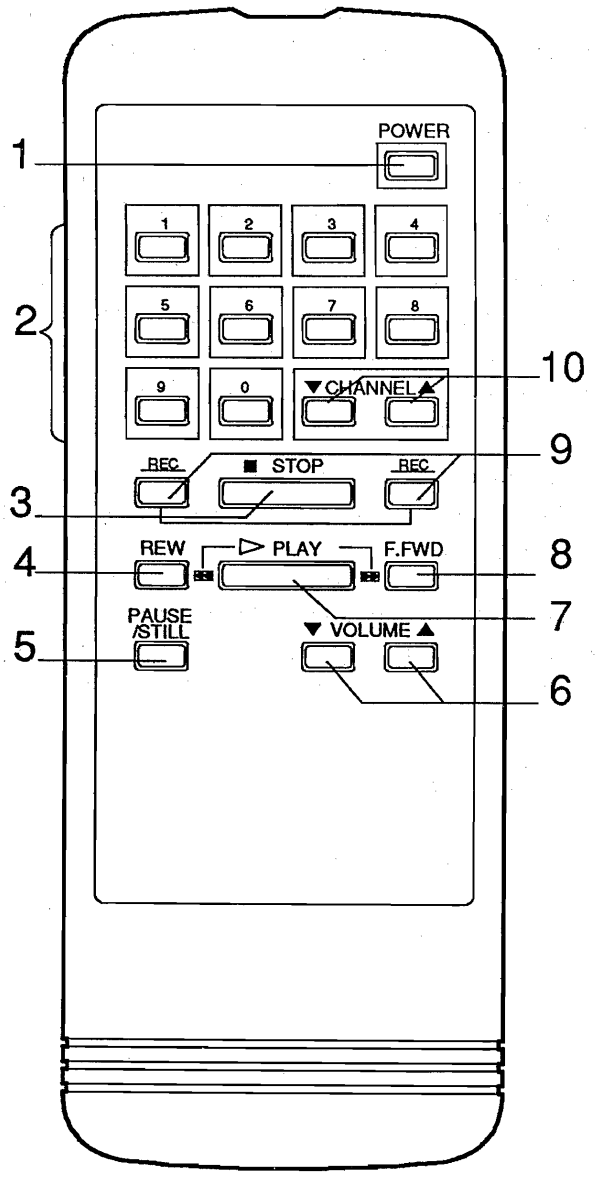


REMOTE CONTROL OPERATION

You can operate all of tape transport functions and TV control functions from the Remote Control (included). The buttons on the Remote Control have the same functions as the corresponding buttons on the unit.

HOW TO USE REMOTE CONTROL

1 **POWER button**—To turn unit on and off.
2 **NUMERICAL keys**—To select desired channels. They cannot be used to set desired channel during Timer Recording. If you want to select channel from 1 to 9, first push 0 key and then push your desired channel number (e.g. for channel 4 press 0,4 not 4).

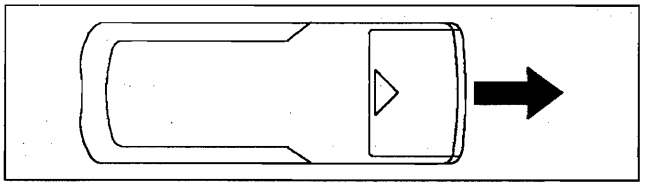


3 **STOP button**—To stop the tape.
4 **REW button**—To rewind the tape. To view the picture rapidly in reverse, during the playback mode.
5 **PAUSE/STILL button**—To stop the tape temporarily during playback or recording. To view a still picture during playback. To reduce noise bars on still picture. May require depressing several times.
6 **VOLUME buttons**—To adjust desired volume level by pressing either "▲" or "▼" button.
7 **PLAY button**—To playback the tape.
8 **F.FWD button**—To move the tape forward rapidly. To view the picture rapidly forward during the playback mode.
9 **REC buttons** —To begin recording, push both 2 buttons (1 is a safety button) at the same time.
10 **CHANNEL buttons**—To select desired channels by pressing either "▲" or "▼" button. They cannot be used during Timer Recording.

INSTALLING THE BATTERIES

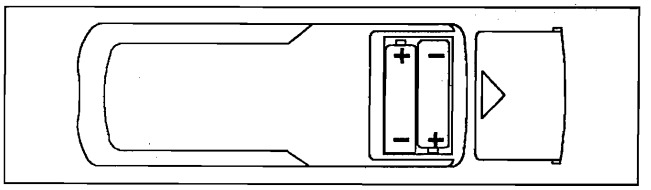
1

Slide the battery compartment cover on the remote unit in the direction of the arrow.



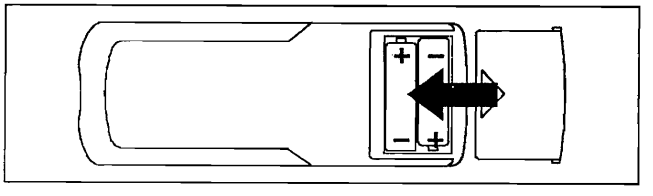
2

Insert 2 "AAA" penlight batteries into the battery compartment in the direction as indicated by the polarity (+/-) markings.



3

Replace the cover.



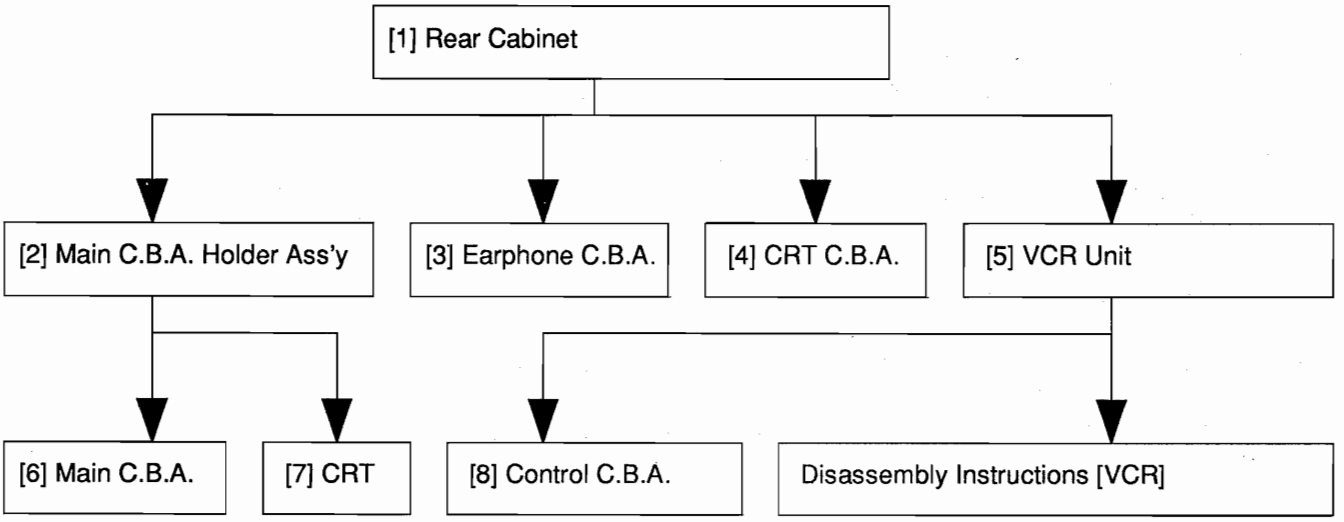
DISASSEMBLY INSTRUCTIONS [CABINET]

1. DISASSEMBLY FLOW CHART

This flow chart indicates the disassembly steps of the cabinet parts, VCR Unit and the P. C. Boards in order to gain access to item (s) to be serviced. When reassembling, perform the step (s) in the reverse order. Bend, route and dress the cables as they were originally.

Caution!!

When removing the CRT, make sure to discharge Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.



2. DISASSEMBLY METHOD

STEP / LOC. . NO.	PART	REMOVAL		
		Fig. No.	REMOVE / ✱UNLOCK / RELEASE / UNPLUG / UNCLAMP / UNSOLDER	Note
[1]	Rear Cabinet	CAB1 CAB3	6 (TL-8)	1
[2]	Main C.B.A. Holder Ass'y	CAB5 CAB6	(TB-10) (CN1) (CN6) (CN201) (W1) (W2) (W3) (W101) (W201)	2
[3]	Earphone C.B.A.	CAB4 CAB6	(CN9) (SP)	3
[4]	CRT C.B.A.	CAB5 CAB6	(CN1002) (W1) (W2) (W3)	4
[5]	VCR Unit	CAB4 CAB6	2 (TL-7) (W101) (W201)	5
[6]	Main C.B.A.	CAB4	3 (TL-1) (TL-5) ✱2 (FK1)	6
[7]	CRT	CAB5	4 (TB-3)	7
[8]	Control C.B.A.	CAB4	(TL-6)	8

Reference <Notes> in Table

1.
   1) Remove 6 screws <TL-8 >and slide the Rear Cabinet backward.

2.
   1) If not already removed, first remove the Rear Cabinet.
   2) Remove all relative wires on the Main C.B.A. (located right side in the cabinet), and remove the Anode Cap, then slide the main C.B.A. Holder Ass'y backward.

Caution!!

Discharge Anode Lead of the CRT with the CRT Ground Wire before removing the Anode Cap.

3.
   1) If not already removed, first remove the Rear Cabinet.
   2) Remove 2 connectors on the Earphone C.B.A., then slide the C.B.A. backward.

Note : When reinstalling, set jack side below.

4.
   1) If not already removed, first remove the Rear Cabinet.
   2) Remove all relative wires, then pull the CRT C.B.A. backward.

5.
   1) If not already removed, first remove the Rear Cabinet.
   2) Remove 2 screws <TL-7 >inside the Control Door, and remove 2 connectors on the Main C.B.A., then slide the VCR Unit backward.

6.
   1) If not already removed, first remove the Rear Cabinet.
   2) Remove the Main C.B.A. Holder Ass'y.
   3) Remove 3 screws <TL-1 >and screw <TL-5 >first, release 2 hooks next, then Main C.B.A. can be removed.

7.
   1) If not already removed, first remove the Rear Cabinet and Main C.B.A. Holder Ass'y.
   2) Remove 4 screws < TB-3 >, then the CRT can be removed.

8.
   1) If not already removed, first remove the Rear Cabinet and the VCR Unit.
   2) Remove screw <TL-6 >.

[1]

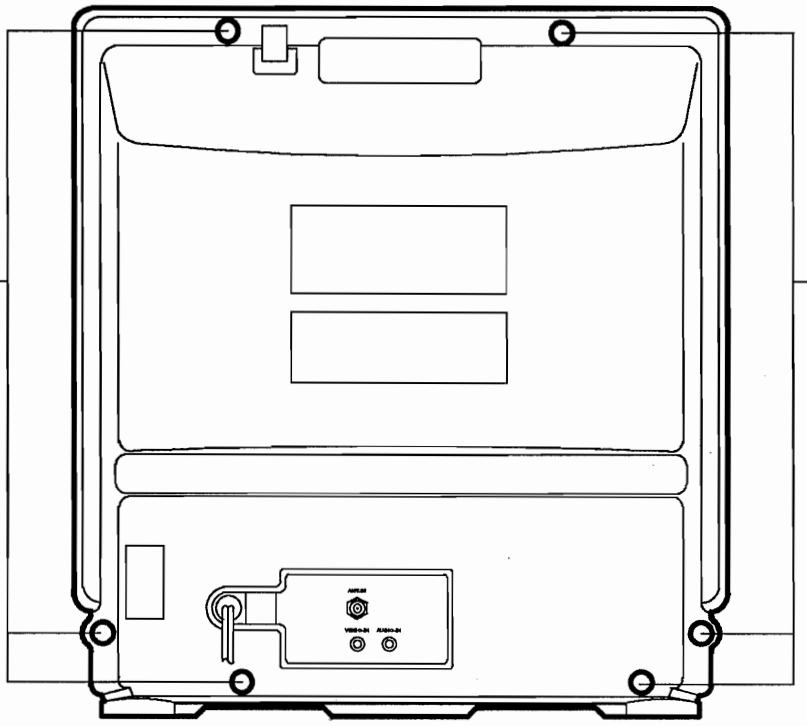


Fig. CAB1

[5]

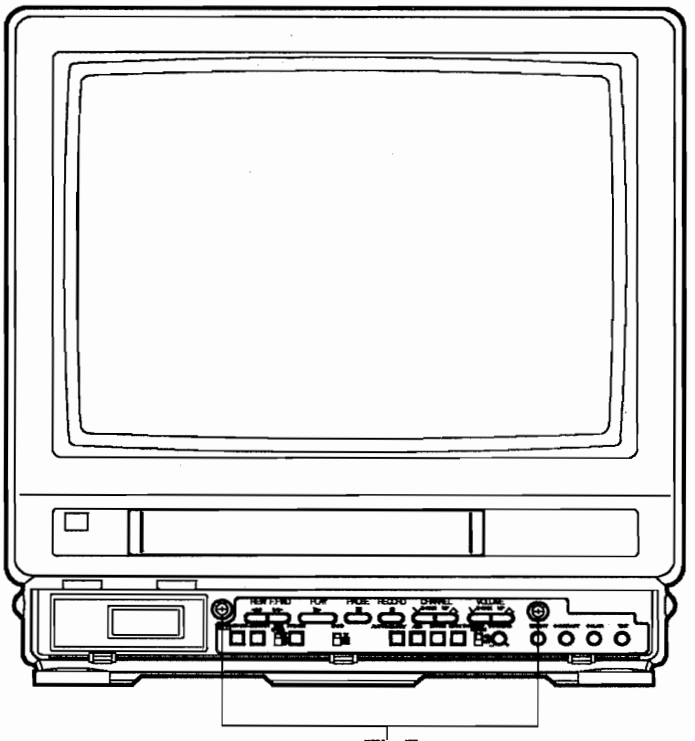


Fig. CAB2

[1]

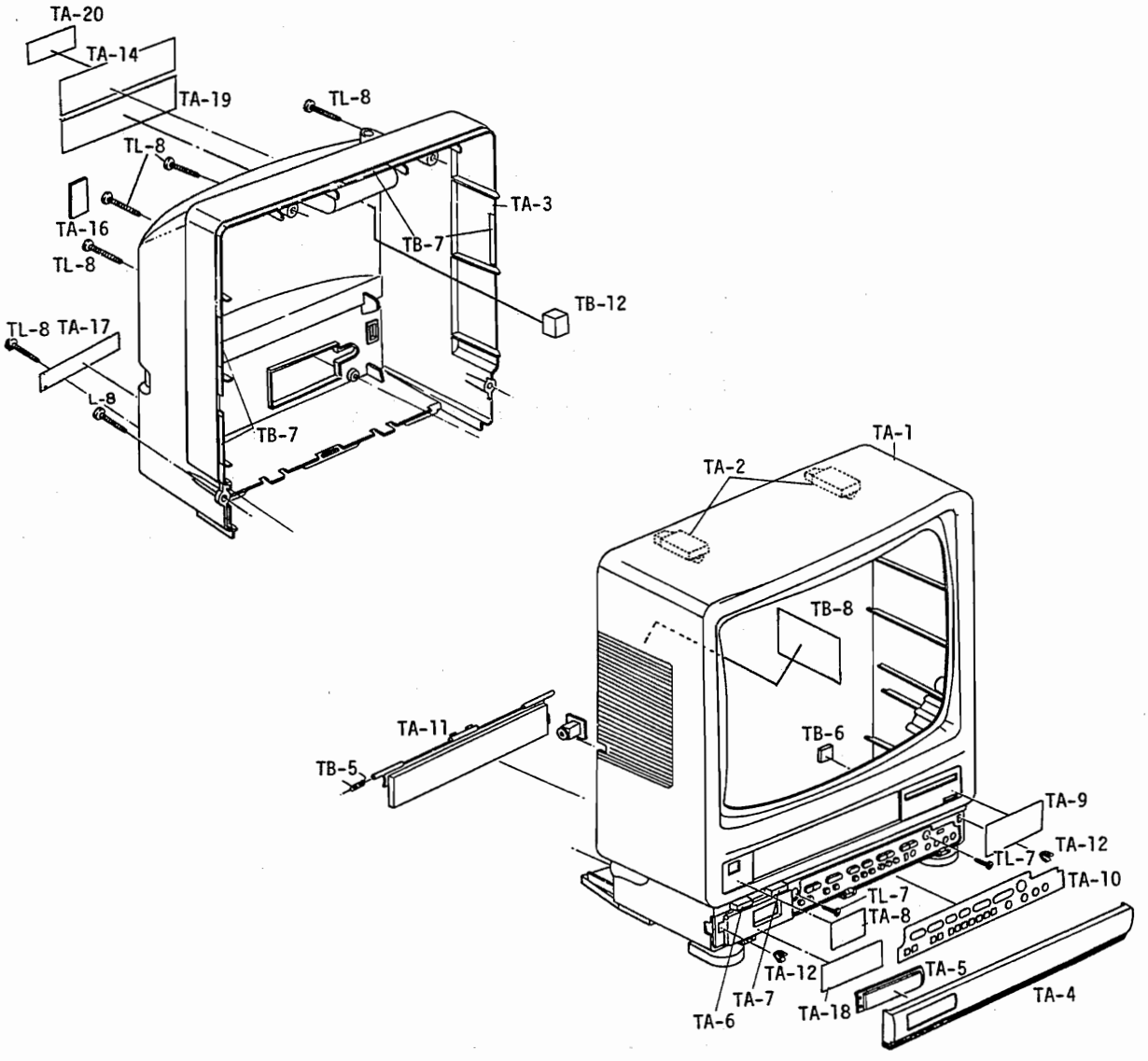

TA-20
TA-14
TA-19
TL-8
TL-8
TA-16
TL-8
TA-3
TB-7
TB-12
TL-8 TA-17
L-8
TB-7
TA-1
TA-2
TB-8
TA-11
TB-5
TB-6
TA-9
TA-12
TL-7
TA-10
TL-7
TA-8
TA-12
TA-5
TA-7
TA-6
TA-18
TA-4

Fig. CAB3

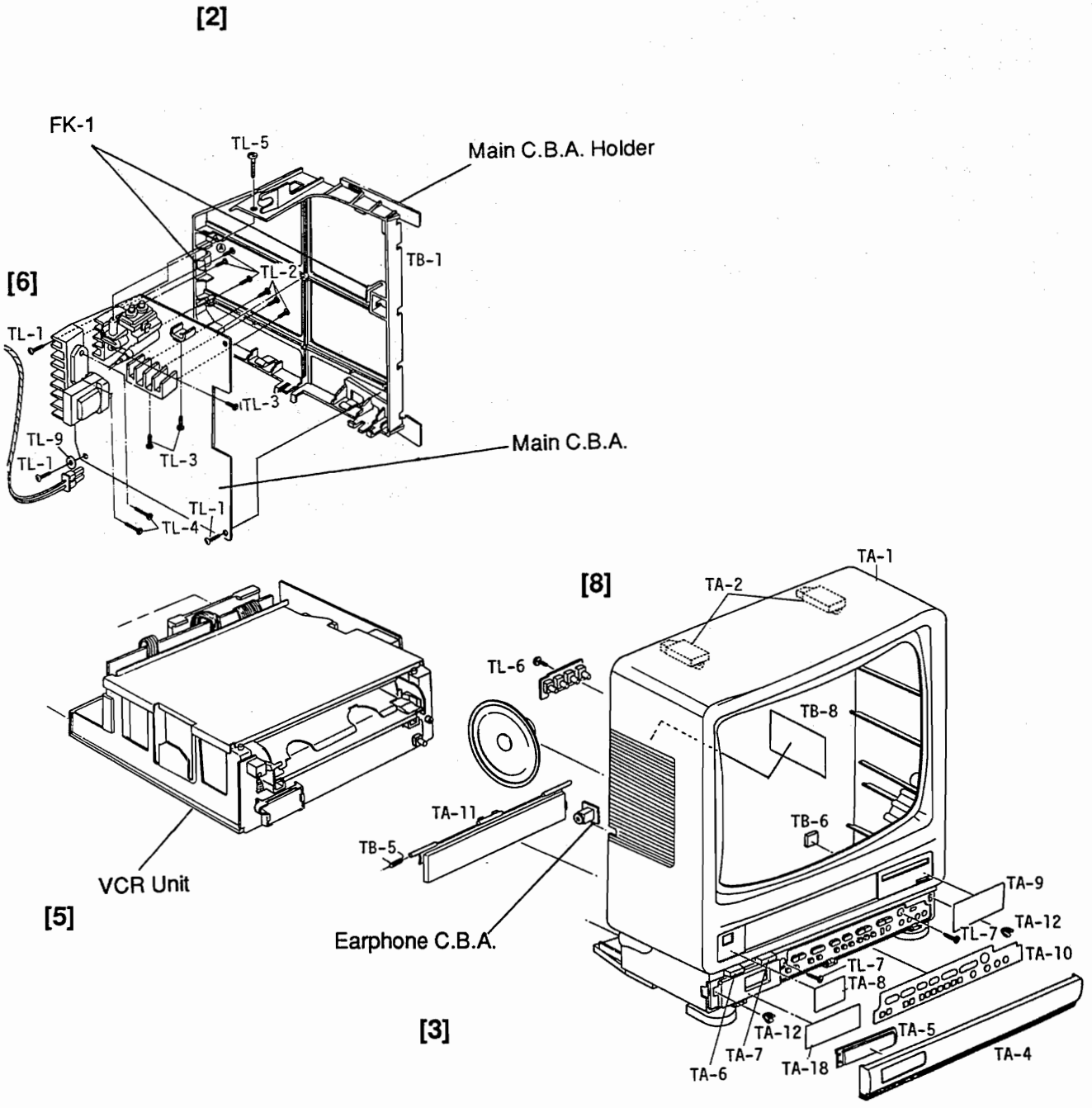

[2]
FK-1
TL-5
Main C.B.A. Holder
TB-1
[6]
TL-2
TL-1
TL-3
TL-9
TL-1
TL-3
Main C.B.A.
TL-1
TL-4
[8]
TA-1
TA-2
TL-6
TB-8
TA-11
TB-6
TB-5
VCR Unit
[5]
Earphone C.B.A.
TA-9
TA-12
TL-7
TA-10
TL-7
TA-8
[3]
TA-12
TA-5
TA-7
TA-4
TA-6
TA-18

Fig. CAB4

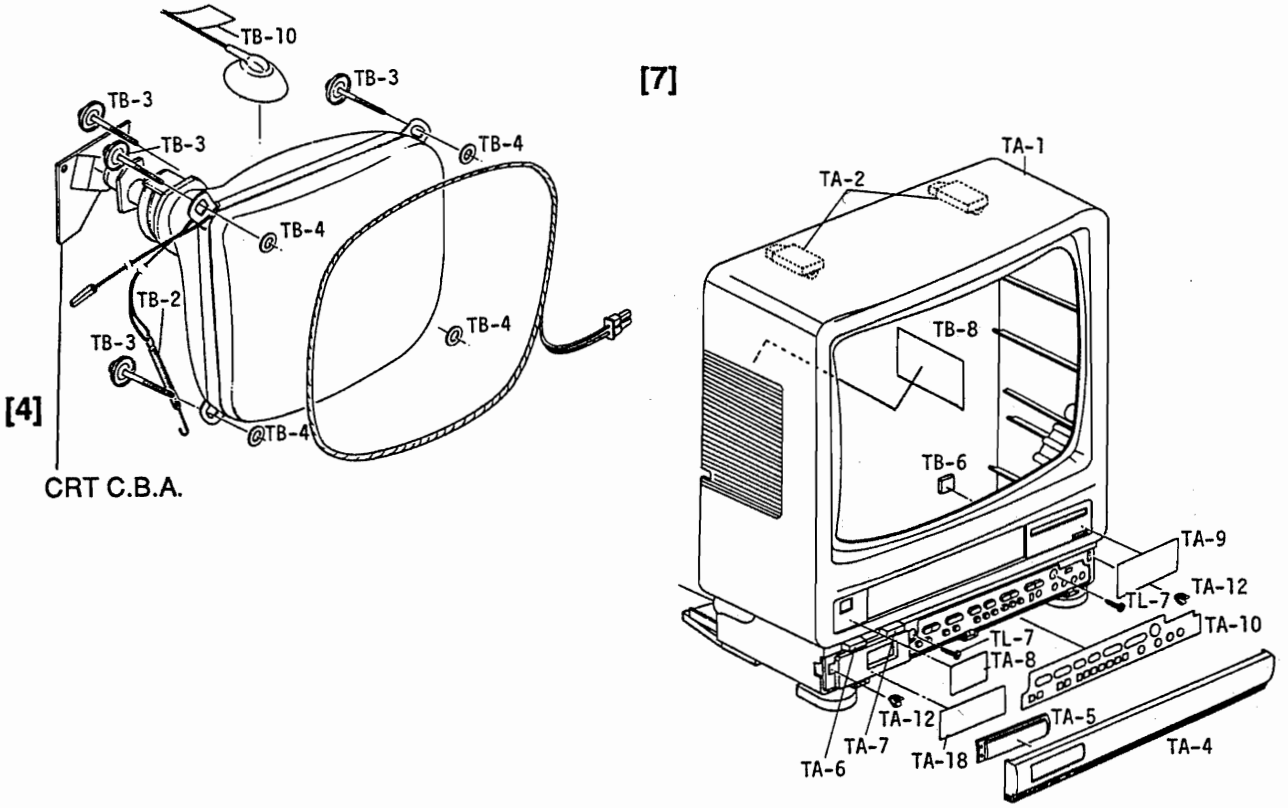
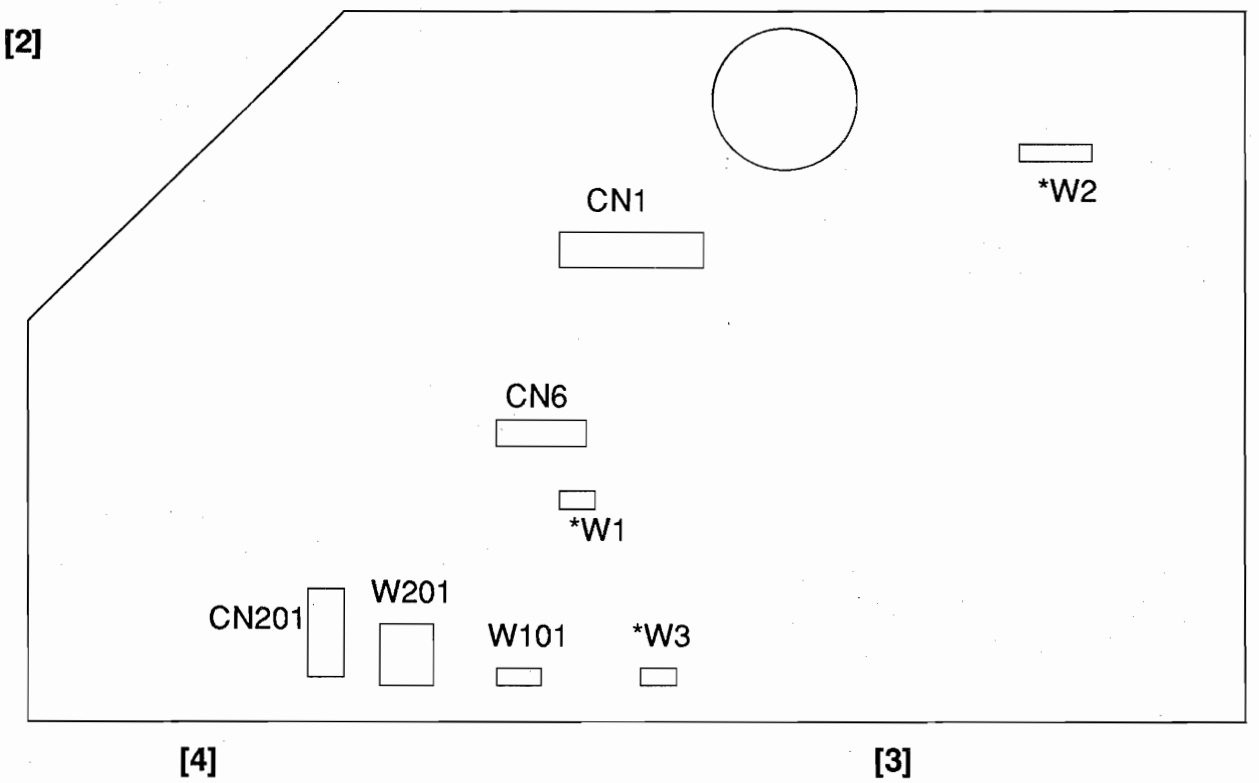

[4]
CRT C.B.A.
TB-10
TB-3
TB-3
TB-3
TB-4
TB-4
TB-2
TB-3
TB-4
TB-4
[7]
TA-1
TA-2
TB-8
TB-6
TA-9
TA-12
TL-7
TA-10
TL-7
TA-8
TA-12
TA-5
TA-7
TA-6
TA-18
TA-4

Fig. CAB5

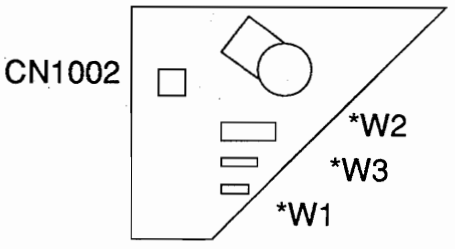
ALL C.B.A.S ARE DRAWN AS INSTALLED IN THE CABINET.

CONNECTORS MARKED * ARE SOLDERED.

MAIN C.B.A. TOP VIEW



CRT C.B.A. TOP VIEW



EARPHONE C.B.A. TOP VIEW

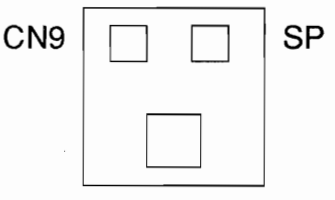


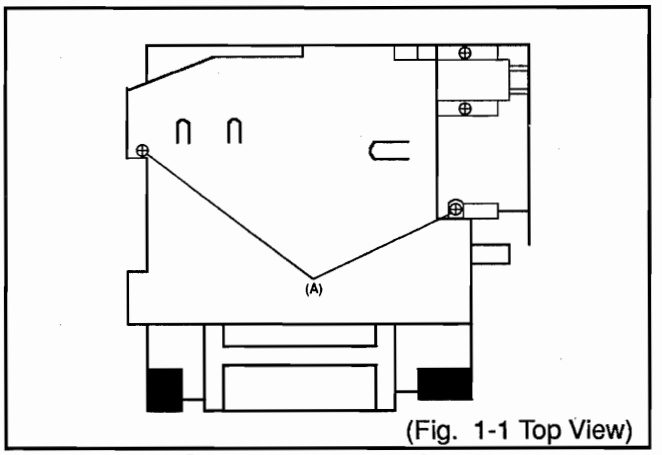
Fig. CAB6

DISASSEMBLY INSTRUCTIONS [VCR UNIT]

Note : Remove VCR Unit from the Cabinet first.

1-1. Top Panel Removal

- Remove 2 screws (A). (Fig. 1-1)

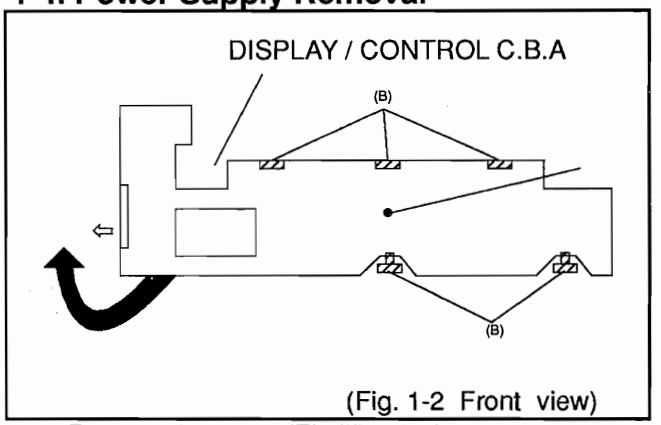


(Fig. 1-1 Top View)

1-2. DISPLAY / CONTROL C.B.A. Removal

- Release the (B) Locking tabs first, pivot Display / Control C.B.A. out at bottom. Then pull C.B.A. down to remove. When reinstalling, make sure you align the C.B.A. with the locating pin. (Fig. 1-2)

1-4. Power Supply Removal

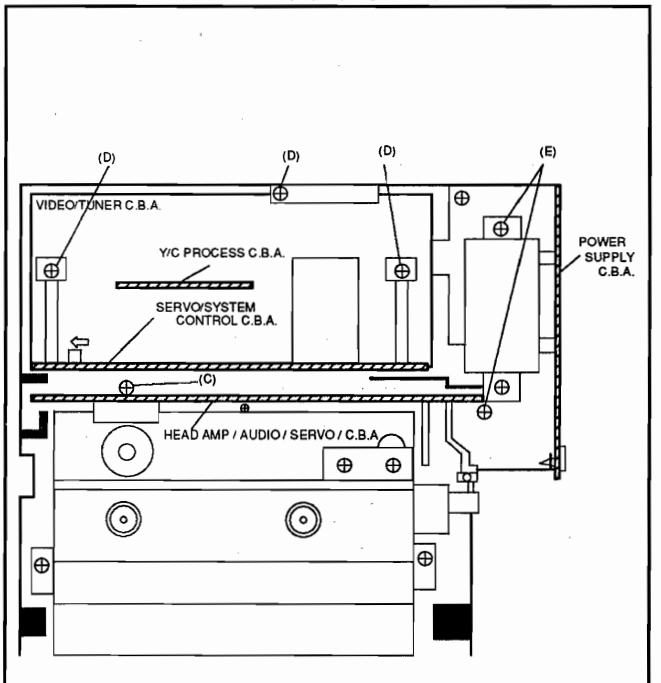


(Fig. 1-2 Front view)

- Remove 2 screws (E). (Fig. 1-3)

1-3. VIDEO / TUNER, SERVO / SYSTEM CONTROL, HEAD AMP / AUDIO / SERVO and Y/C PROCESS C.B.A. Removal

- Remove screw (C). (Fig. 1-3)
- Remove 3 screws (D). (Fig. 1-3)



(Fig. 1-3 Top View)

MECHANICAL ADJUSTMENT PROCEDURES

SERVICE INFORMATION

A. Method for Manual Tape Loading / Unloading of VCR Without Cassette Tape.

To load, turn the Loading Pulley (Fig. MA-M2) clockwise. To unload, turn the Loading Pulley Counter Clockwise.

B. How to place the Cassette Holder in the down position without a Cassette Tape.

To place the Cassette Holder in the down position without a Cassette Tape use one of the following procedures.

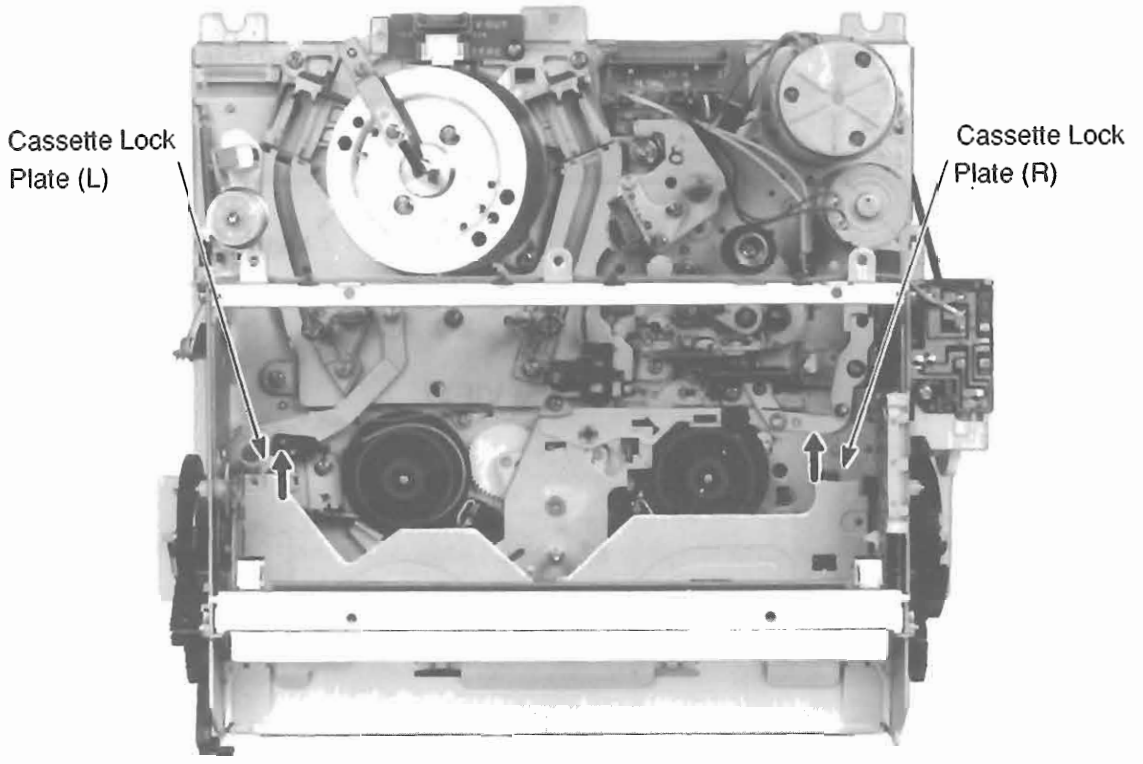
METHOD 1

1. Remove the Top Case and then connect AC Plug.
2. Protect the Start Sensor and End Sensor or LED Sensor.
3. Push the Cassette Holder to the Deck Rear Side (in Fig. MA-M1 as shown by the arrow) while pushing the Cassette Lock Plate (L) / (R) (in Fig. MA-M1 as shown by the arrow) to release the lock. The Cassette Holder will move into the down position by itself.

METHOD 2 (MANUAL)

1. Remove the Top Case and Bottom Panel, then disconnect AC Plug.
2. Turn the Middle Pulley in Fig.MA-M2 clockwise (for down position) while pushing the Cassette Lock Plate (L) / (R) (in Fig. MA-M1 as shown by the arrow) to release the lock. The Cassette Holder may be moved into the down position by turning the Middle Pulley.

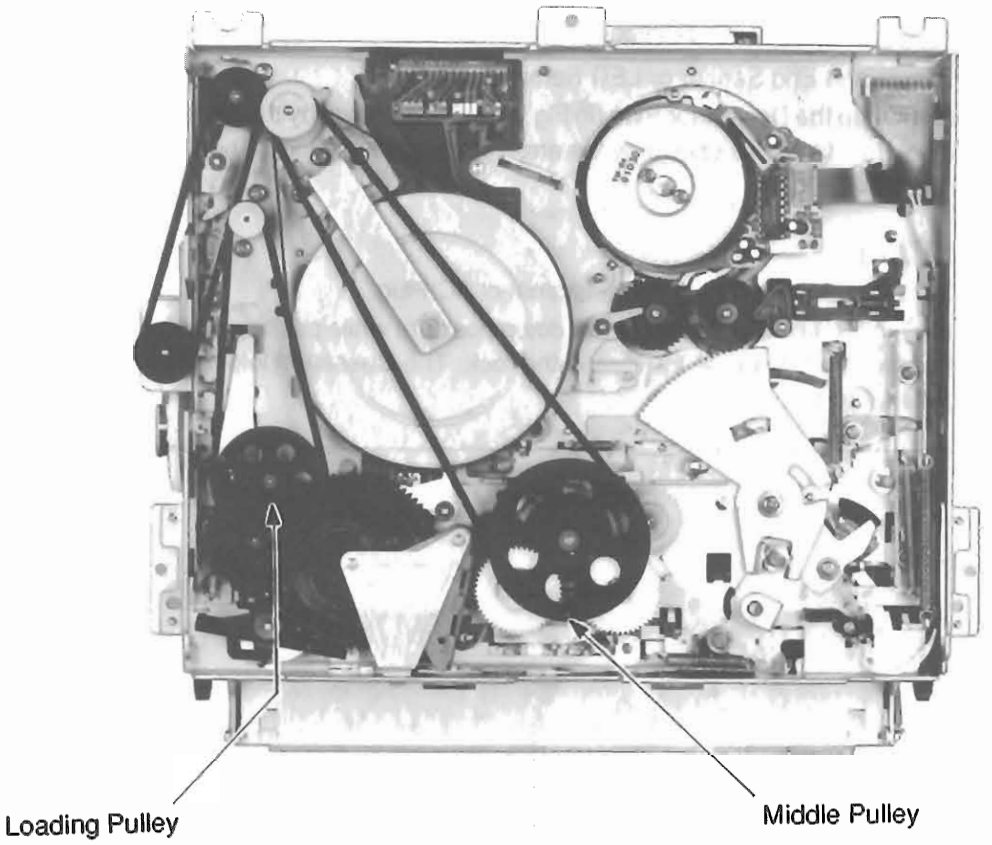
<REAR SIDE>



TOP VIEW

Fig. MA-M1

<REAR SIDE>



BOTTOM VIEW

Fig. MA-M2

1. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

NOTE:

To perform these adjustment/confirmation procedures make sure that the Tracking Control is set in the neutral position.

Equipment required:

Dual Trace Oscilloscope
VHS Alignment Tape (F8-A)
Post Adjustment Screwdriver
X-Position Adjustment Fixture
Screwdriver (To fasten Lock Screw of Tape Guide Rollers).
Box Driver M3

1-A. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING POSITION

Purpose:

To make sure that the tape running is well stabilized.

Symptom of Misadjustment:

If the tape runs with instability, the tape will be damaged.

1. Play back a cassette tape and confirm that the tape runs without curling or creasing at the guide rollers [2] and [3] and at points A and B on the lead surface. (Refer to Fig. M1 and M2)
2. If curling or creasing is apparent, adjust the height of guide rollers by turning the top of guide rollers [2] and [3] with the Post Adjustment Screwdriver. (Refer to Fig. M1 and M3)
3. Confirm that the tape runs without curling or creasing at the lower flange of Impedance Roller. If curling or creasing is apparent, adjust the height of Impedance Roller in both PLAY and REV modes by turning the Nut M3 with BOX DRIVER M3. (Refer to Fig. M4)

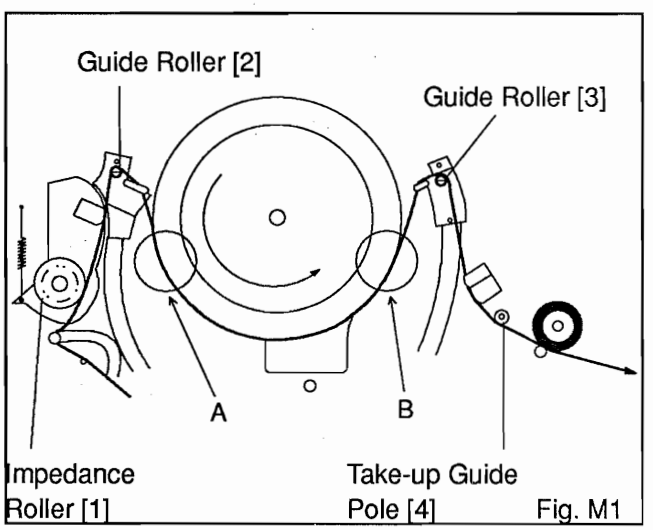


Fig. M1

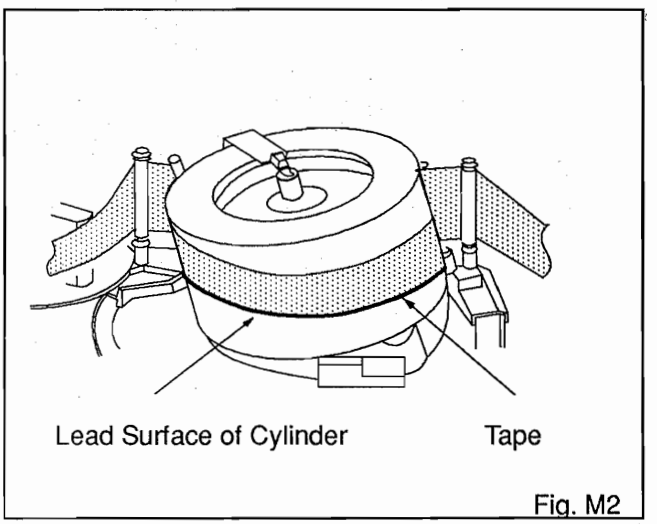


Fig. M2

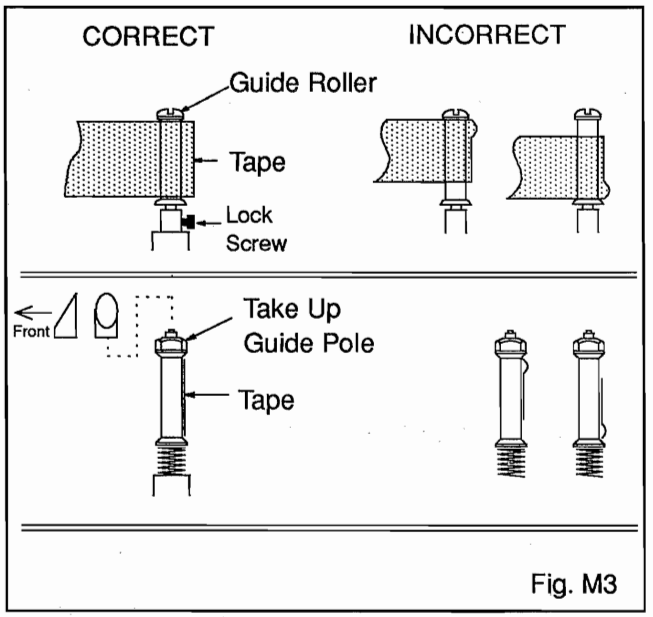


Fig. M3

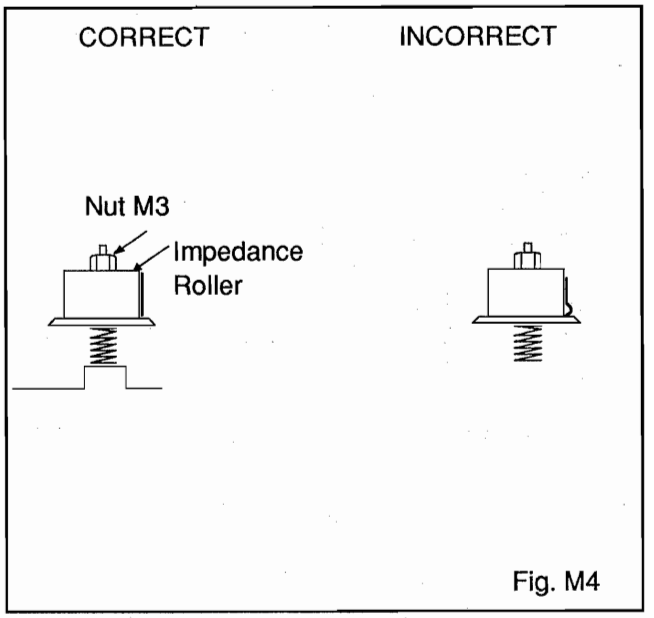


Fig. M4

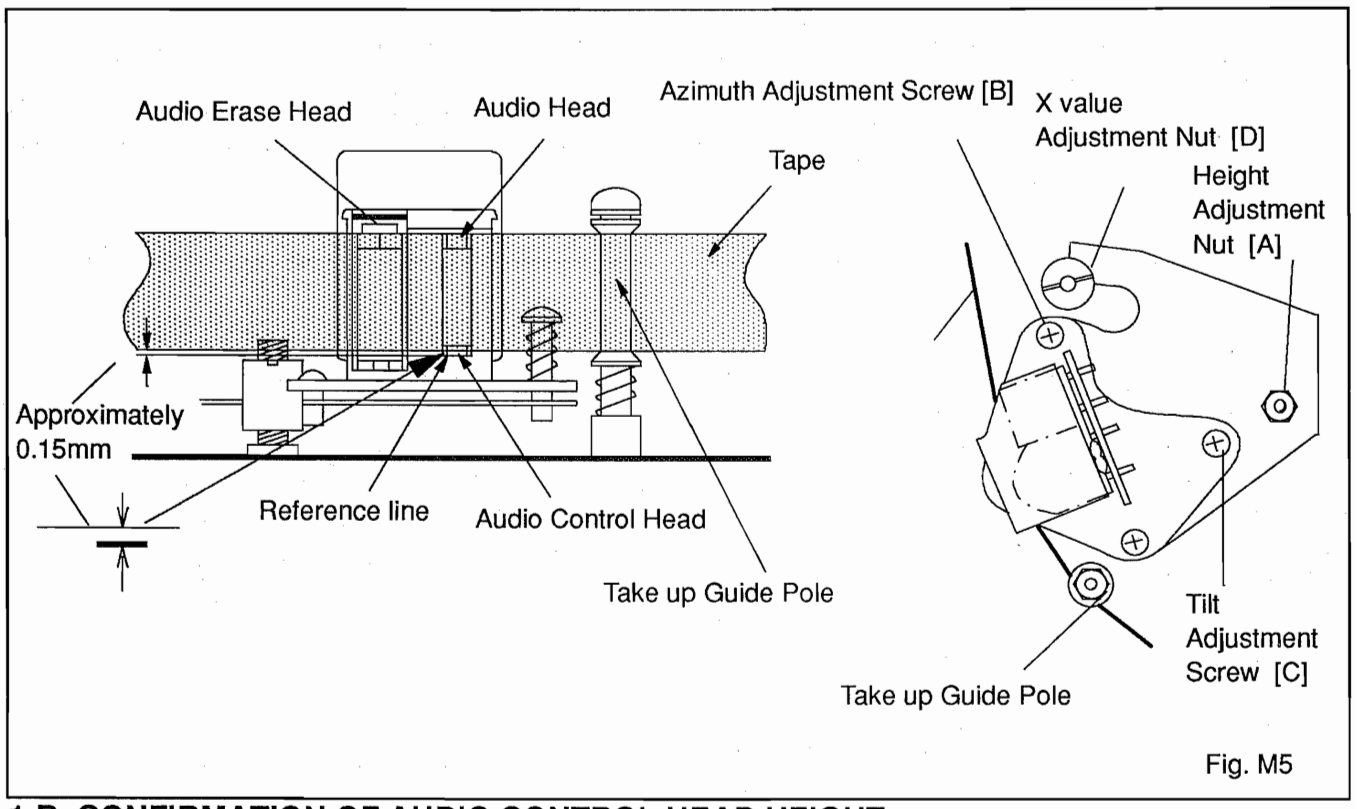


Fig. M5

1-B. CONFIRMATION OF AUDIO CONTROL HEAD HEIGHT

Purpose:

To make sure that the tape runs properly along the Control Head.

Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation can not be achieved.

This confirmation is required when the Audio Control Head is replaced and for a preliminary height adjustment. For final adjustments, perform items 1-C and 1-D.

1. Play back a cassette tape. Looking at the lower edge of the Control Head with the tape in motion, ensure that the lower edge of the tape runs 0.15mm above the lower edge of the Control Head. If it doesn't, turn Height Adjustment Nut [A] slightly in either direction as necessary to correct it. Turn clockwise to lower the head and counter clockwise to raise it. (Refer to Fig. M5)

1-C. CONFIRMATION OF TILT OF AUDIO CONTROL HEAD

Purpose:

To confirm that the tape running is well stabilized. In particular, confirm that tape properly picks up the Audio Signal at the upper part and Control Signal at the lower part.

Symptom of Misadjustment:

If the tilt of the Audio Control Head is poorly adjusted, the tape will be eventually damaged.

Play back a cassette tape and confirm that the tape running between Take-up Guide Pole [4] in Fig.M1 and Audio Control Head has no slack. If the tape has slack, adjust the Control Head by turning tilt adjustment screw [C] in Fig. M5 so that the tape has no slack.

1-D. HEIGHT AND AZIMUTH ADJUSTMENT OF AUDIO CONTROL HEAD

Purpose:

To adjust the position and height of Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment

If the position of Audio Control Head is not properly adjusted, the Audio S/N Ratio or Frequency Response will be poor.

[Unit with Monaural and Hi-Fi Audio]

1. Connect the oscilloscope to the audio output jack on the rear of the deck.
2. Play back the monoscope portion (8kHz, Audio) of the alignment tape (F8-A).
3. Adjust the Azimuth Adjustment Screw [B] in Fig. M5 so that the output level is at a maximum.
4. Readjust the Height Adjustment Nut [A] in Fig. M5 for maximum output.
5. Disconnect the oscilloscope.

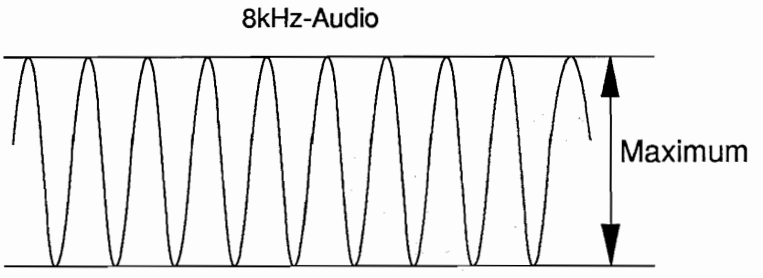


Fig. M6

NOTE: Fix the screw [C] with lock paint after readjustment.

1-E. X VALUE ADJUSTMENT

Purpose:

To adjust the horizontal position of the Audio Control Head.

Symptom of Misadjustment:

If the horizontal position of the Audio Control Head is not properly adjusted, maximum envelope can not be obtained at the neutral position of the Tracking Control.

1. Set tracking control to the neutral position.
2. Connect the oscilloscope to TP4 (ENV) on the Main C.B.A. Use TP2 (RF-SW) as a trigger.
3. Play back the monoscope portion of the alignment tape (F8-N) and confirm that the PB FM signal appears.
4. Adjust the X Value Adjustment Nut D in Fig. M7 for maximum PB FM signal.

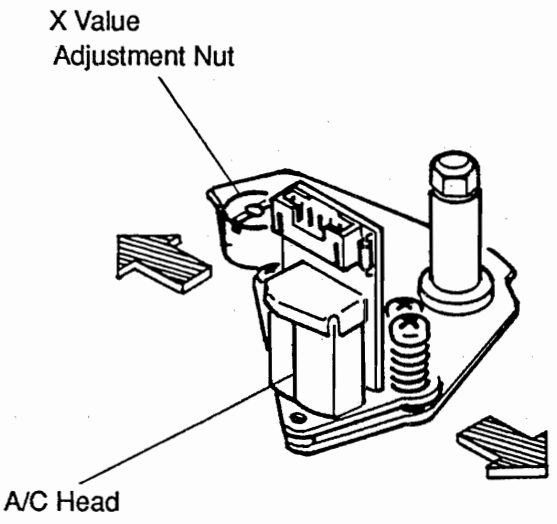


Fig. M7

1-F. CONFIRMATION / ADJUSTMENT OF ENVELOPE WAVEFORM

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. The tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control.

1. Set tracking control to the neutral position.
2. Connect the oscilloscope to TP4 (ENV) on the Main C.B.A.. Use TP2 (RF-SW) as a trigger.
3. Play back the monoscope portion of the alignment tape (F8-N) and adjust the height of guide rollers [2] and [3], watching the scope display so that the envelope becomes as flat as possible.
   If adjustment is required, turn top of guide roller with the Post Adjustment Screwdriver.
4. When the scope display is as shown in Fig. M8, adjust the height of [2] so that the waveform looks like Fig. M9.

Dropping envelope level at the beginning of track

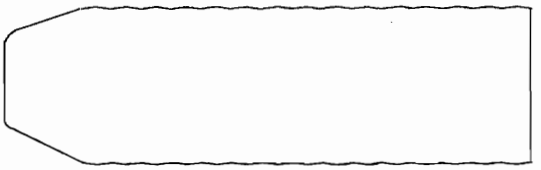


Fig. M8

5. When the scope display is as shown in Fig. M9, adjust the height of [3] so that the waveform looks like Fig. M10.

Dropping envelope level at the end of track

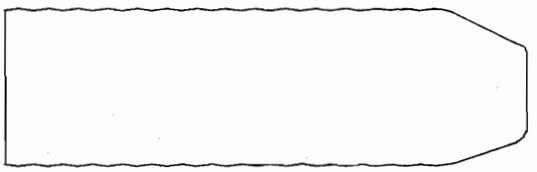


Fig. M9

6. When [2] and [3] are adjusted properly, there is no Envelope Drop at the beginning and end of track as shown in Fig. M10.

Envelope is adjusted properly (No Envelope Drop)

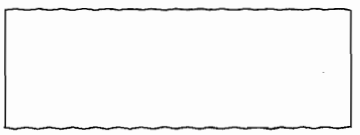


Fig. M10

NOTE:

After adjustment, confirm the X VALUE by pushing the Tracking Control Up or Down Buttons alternately, to check the symmetry of the envelope. If required, perform "X VALUE ADJUSTMENT".

2. REPLACEMENT OF DRUM MOTOR

1. Disconnect the P.C.B Assembly DM from the stator of DRUM MOTOR.
2. Remove 2 screws (S-11), and then take off the rotor of DRUM MOTOR.
3. Remove 3 screws (S-12), and then take off the stator of DRUM MOTOR.
4. Replace the stator of DRUM MOTOR, and then tighten 3 screws (S-12).
5. Replace the rotor of DRUM MOTOR, and then tighten 2 screws (S-11).
6. Connect the P.C.B Assembly DM to the stator of DRUM MOTOR. (Refer to Fig. M11)
   Upon completion of above procedure, confirm and adjust the following items.
7. Play back Switching Point. (refer to Electrical Adjustment)
8. X value. (Refer to Alignment Procedure for Mechanism Item 1-E)

NOTE:

Install the rotor of DRUM MOTOR so that the PG Magnet on the side of Drum Motor Type No. (TM-84) aligns with the Video Head CH1. (Refer to Fig. M11)

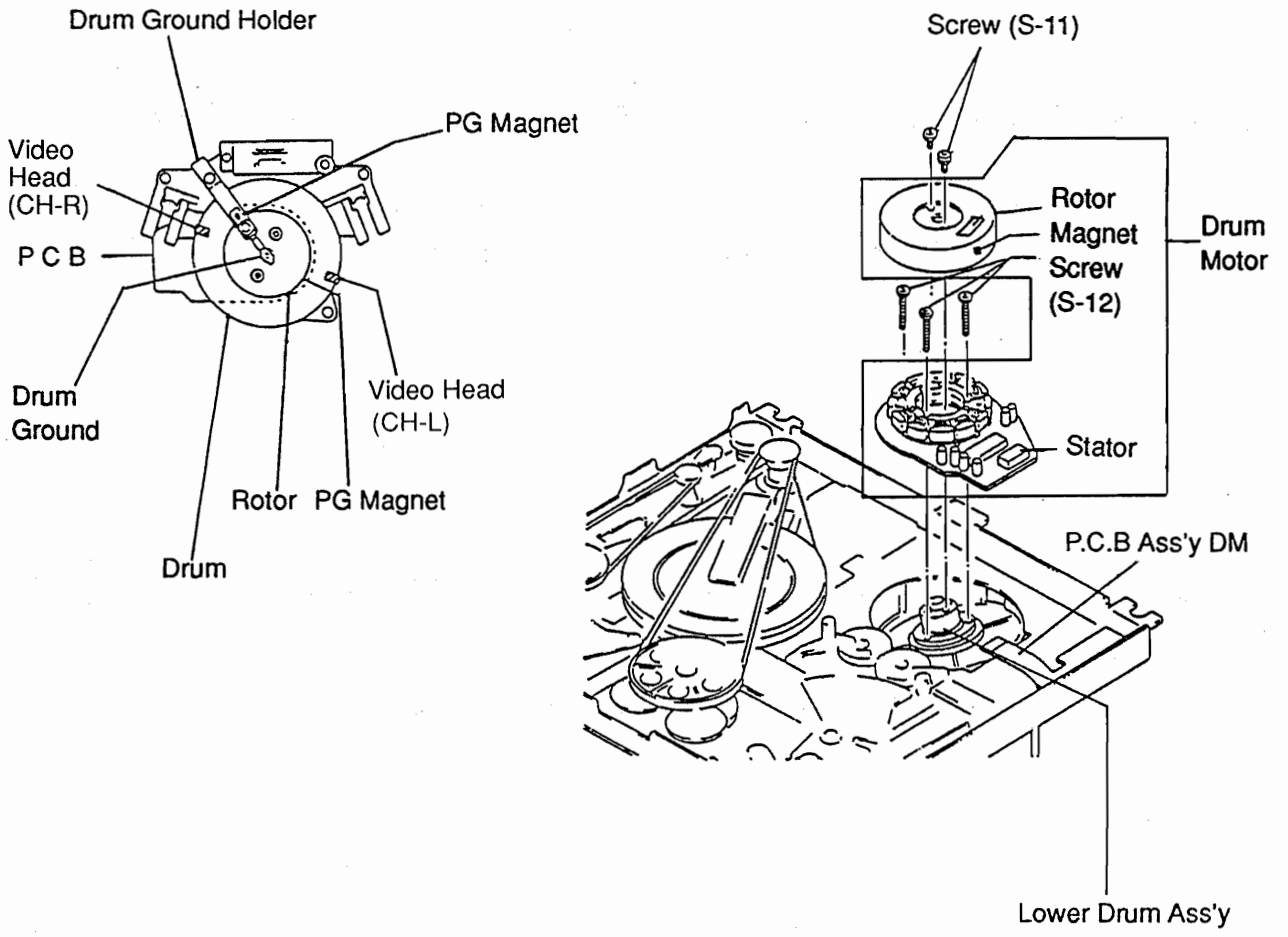


FIG. M11

3. REPLACEMENT OF CYLINDER ASSEMBLY

1. Disconnect the P.C.B Ass'y DM from the stator of DRUM MOTOR.
2. Remove 3 screws (S-3), and then take off the CYLINDER ASSEMBLY.
3. Replace the CYLINDER ASSEMBLY, and tighten 3 screws (S-3).
4. Connect the P.C.B Ass'y DM to the CYLINDER ASSEMBLY. (Refer to Fig. M12)
   Upon completion of above procedure, confirm and adjust the following items:
5. Play back Switching Point. (Refer to Electrical Adjustment.)
6. Azimuth (Refer to Alignment Procedure for Mechanism Item 1-D).
7. Audio Output Level. (Refer to Alignment Procedure for Mechanism Item 1-D).
8. X value. (Refer to Alignment Procedure for Mechanism Item 1-E).
9. Envelope Waveform. (Refer to Alignment Procedure for Mechanism Item 1-F).

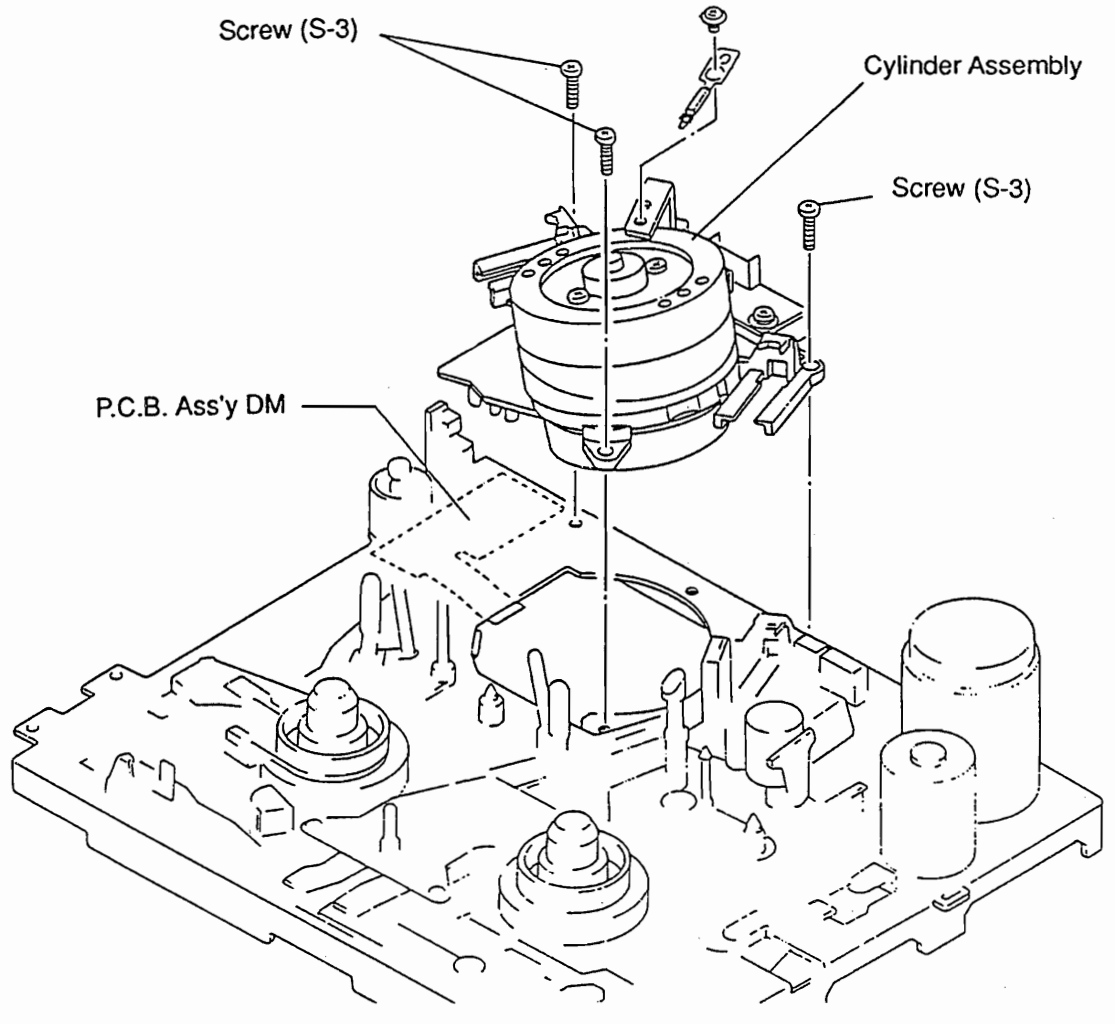


Fig. M12

4.REPLACEMENT OF UPPER DRUM/LOWER DRUM

When reinstalling the Upper, Lower Drums, confirm and adjust the following items:

- Play back switching point (Refer to Electrical Adjustment).
- Azimuth (Refer to Alignment Procedure for Mechanism Item 1-D).
- Audio Output Level (Refer to Alignment Procedure for Mechanism Item 1-D).
- X value (Refer to Alignment Procedure for Mechanism Items 1-E).
- Envelope Waveform. (Refer to Alignment Procedure for Mechanism Item 1-F).

NOTE:

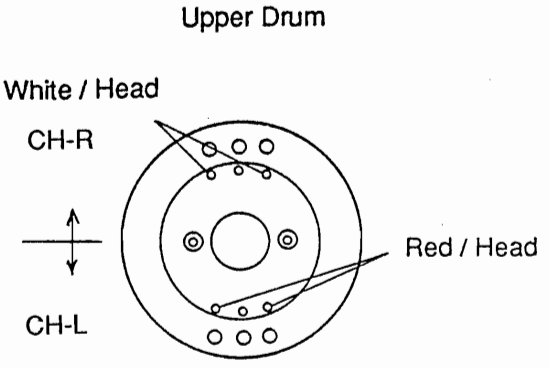
Install the Upper Drum so that the Video Head CH1 aligns with the PG Magnet on the side of Drum Motor.

UPPER DRUM / REINSTALLATION OF UPPER, LOWER DRUMS AND ROTOR

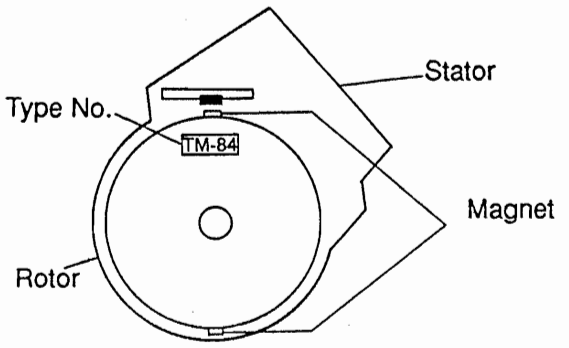
1. Remove the Front Loading Unit.
2. Remove screw (A) and take off the Drum Ground Bracket (B).
3. Remove 2 screws (C) and take off the Upper Drum (D).

NOTE:

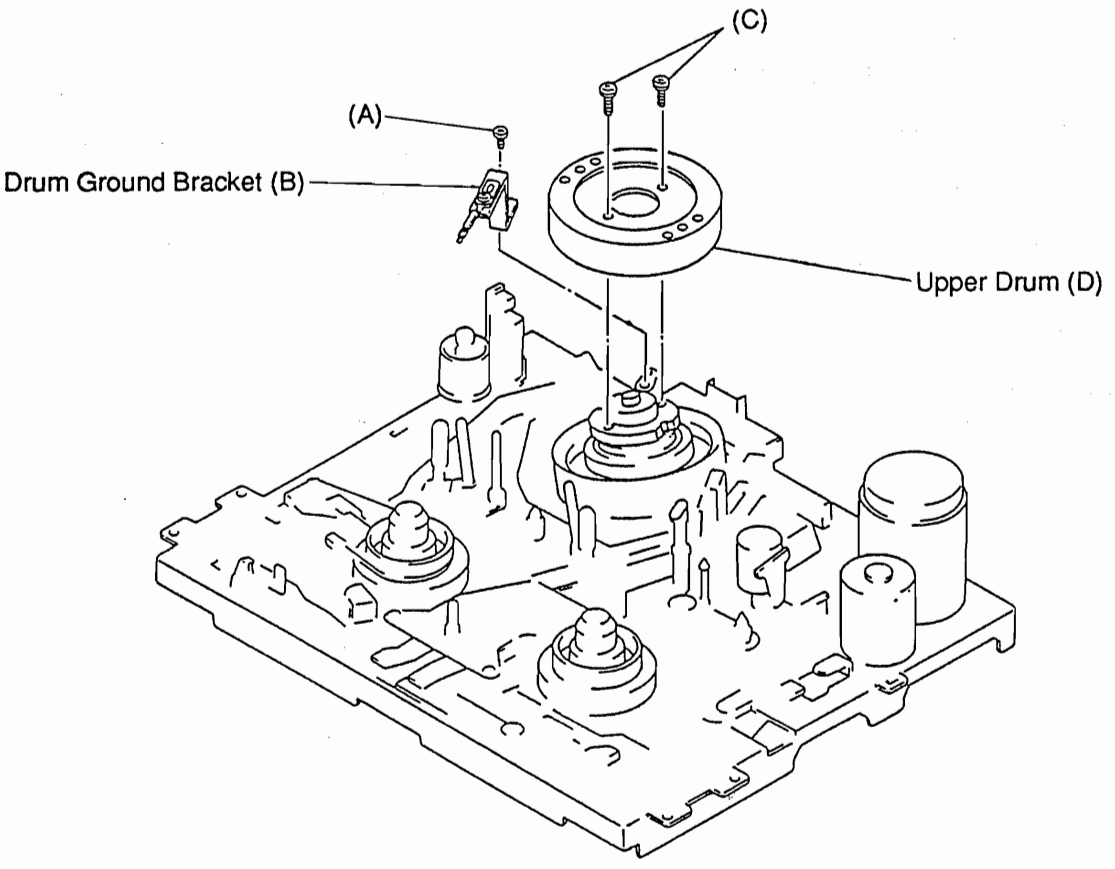
1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video Head is defective, replace the upper drum with the Head.



<UPPER DRUM TOP VIEW>

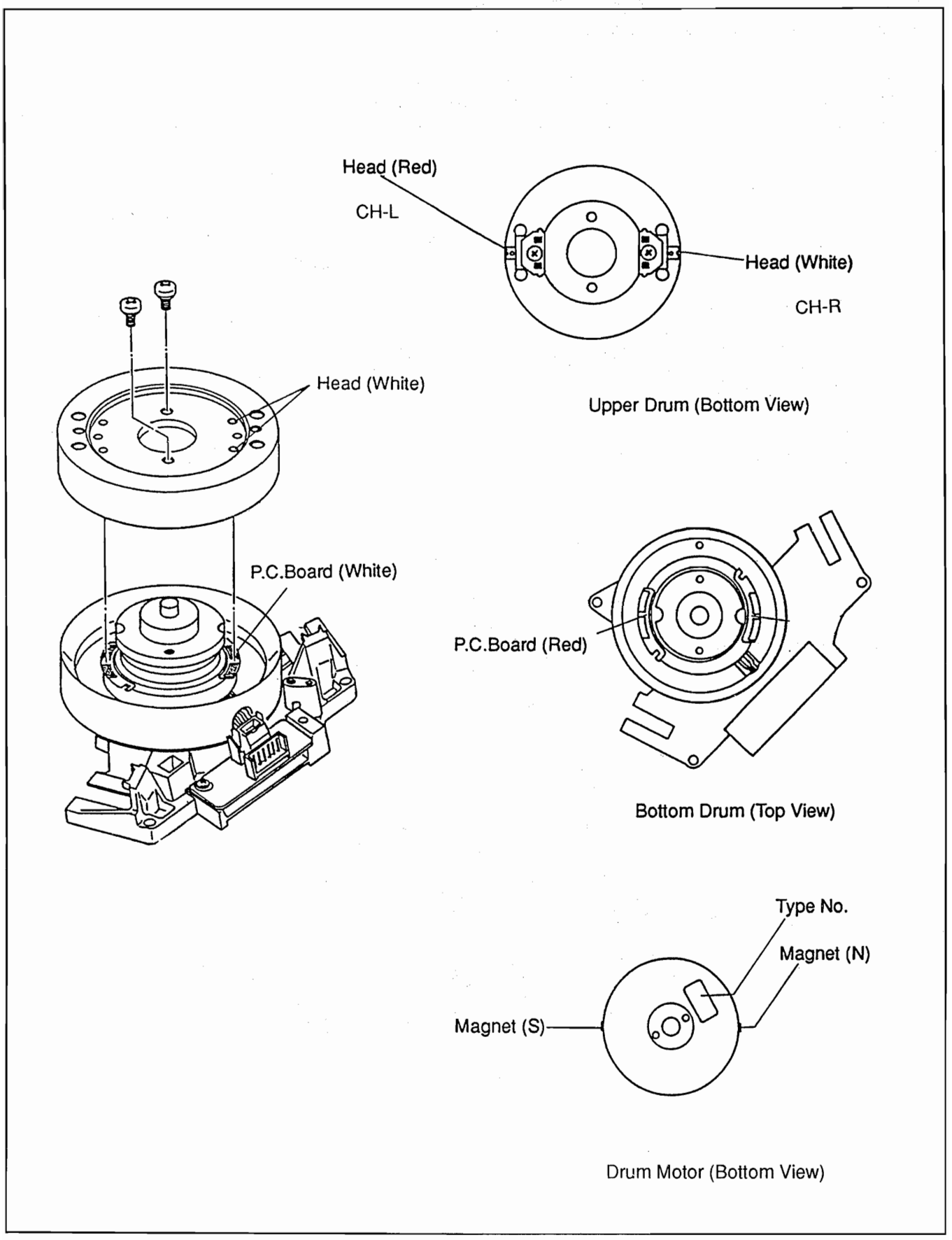


<DRUM MOTOR BOTTOM VIEW>



Note:

For upper Drum (A), Lower Drum (B) and Rotor (C), points A, B, C must line up properly.



DISASSEMBLY / ASSEMBLY PROCEDURES OF DECK MECHANISM

This procedure starts with the conditions that the Cabinet parts, Cassette Up Unit and Head Amp C.B.A. have been removed. Also, all the following procedures for adjustment and parts replacement should be performed in STOP mode. When reassembling, perform the step(s) in the reverse order.

STEP / LOC. NO.	START-ING NO.	PART		REMOVAL		INSTALLATION
				FIG. NO.	REMOVE ✱ UNHOOK / UN-LOCK / RELEASE / UN-PLUG / UNSOLDER	ADJUSTMENT CONDITION
[1]	1	ARM, BACK TENSION	T	DM1 DM3	✱ (P-1), (C-1)	(+) See Setting Condition in Fig. DM3
[2]	1	BAND, BT	T	DM1 DM3	(S-1), (K-1), ✱(P-2)	
[3]	3	SUPPORT, BACK TEN-SION	T	DM1	(S-2)	----------
[4]	2, 3	SUPPLY REEL ASSEMBLY	T	DM1	----------	(+) ----------
[5]	5	CYLINDER UNIT	T	DM1	3(S-3), Connections	See Replacement of CYLINDER ASSEMBLY.
[6]	5	LOADING POST (L) UNIT	T	DM1	(S-4) Slide to rear to remove	(+) See Alignment Proce-dure for Mechanism Item 1-A
[7]	5	LOADING POST (R) UNIT	T	DM1	(S-5) Slide to rear to remove	
[8]	8	ROLLER (A), PINCH	T	DM1	(S-6)	----------
[9]	9	HEAD BASE ASSEMBLY	T	DM1 DM4	(N-1), ✱(P-2)	See Confirmation of Audio / Control Head Height
[10]	10	PULLEY ASSEMBLY, MIDDLE	B	DM2	(C-2) DRIVE BELT	----------
[11]	10	REEL DRIVE GEAR AS-SEMBLY	T	DM1 DM5	(S-7), 2(S-8)	See Setting Condition in Fig. DM6
[12]	10	GEAR, ASSEMBLY, P	T	DM5	----------	
[13]	10	GEAR ASSEMBLY, RF	T	DM5	----------	
[14]	10,11, 12	ARM ASSEMBLY, T BRACKET	T	DM1 DM6	✱(P-3)	See Setting Condition in Fig. DM6
[15]	10,11, 12,13	ARM ASSEMBLY, S BRACKET	T	DM1 DM6	✱(P-4)	
[16]	16	BRAKE, S SOFT	T	DM1 DM6	✱(P-5), (C-3)	
[17]	10	BRAKE ACTUATOR UNIT	T	DM1 DM7	✱(P-6), ✱(P-7), ✱(P-8)	See Setting Condition Fig. DM7
[18]	10	TAKE-UP REEL ASSEM-BLY	T	DM1	----------	(+)
[19]	19	PULLEY, LOADING	B	DM2 DM8	BELT, LOADING (C-4)	----------
[20]	19	GEAR, LOADING	B	DM2 DM8	(C-5)	----------

STEP / LOC. NO.	START-ING NO.	PART		REMOVAL		INSTALLATION
				FIG. NO.	REMOVE ✱ UNHOOK / UN-LOCK / RELEASE / UN-PLUG / UNSOLDER	ADJUSTMENT CONDITION
[21]	21	PLATE, LOADING, LEVER REINFORCE	B	DM2 DM8	2 (S-9)	----------
[22]	19,20	ARM, EJECT ACTUATE	B	DM2 DM8	(C-6)	----------
[23]	19, 21	SPOKE, REC ACTUATE	B	DM2 DM8	✱	----------
[24]	19,20 22	BRAKE, ARM ACTUATE	B	DM2 DM8	----------	----------
[25]	21	LEVER SEMI ASSEMBLY LOADING	B	DM2 DM8	----------	----------
[26]	19, 21	CAM, LOADING	B	DM2 DM8	----------	(+) See Installation procedure for Mechanism Item 6-1
[27]	27	PLATE, LOADING GEAR	B	DM2 DM9	(S-10), (K-2) ✱ (R-9)	(+) See Alignment Procedure for Mechanism Item 6-2 See Setting Condition in Fig. DM9
[28]	28	DRUM MOTOR TM-84	B	DM2	2(S-11), 3(S-12) *DISCONECT MYLAR CABLE	See Replacement of DRUM MOTOR TM-84.

LIST OF ABBREVIATIONS

T=Top, B=Bottom
(R-1)=Retaining Ring (R-1), 2 (P-1)=2 Springs (P-1), (S-1)=Screw (S-1),
(W-1)=Washer (W-1), 3(S-5)=3 Screws (S-5) (C-1)=Cut Washer (C-1),
(N-1)=Nut (N-1), (L-1)=Locking Tab (L-1) (K-1)=Collar (K-1),
(+), Refer to Deck Exploded Views for lubrication information.

TOP VIEW

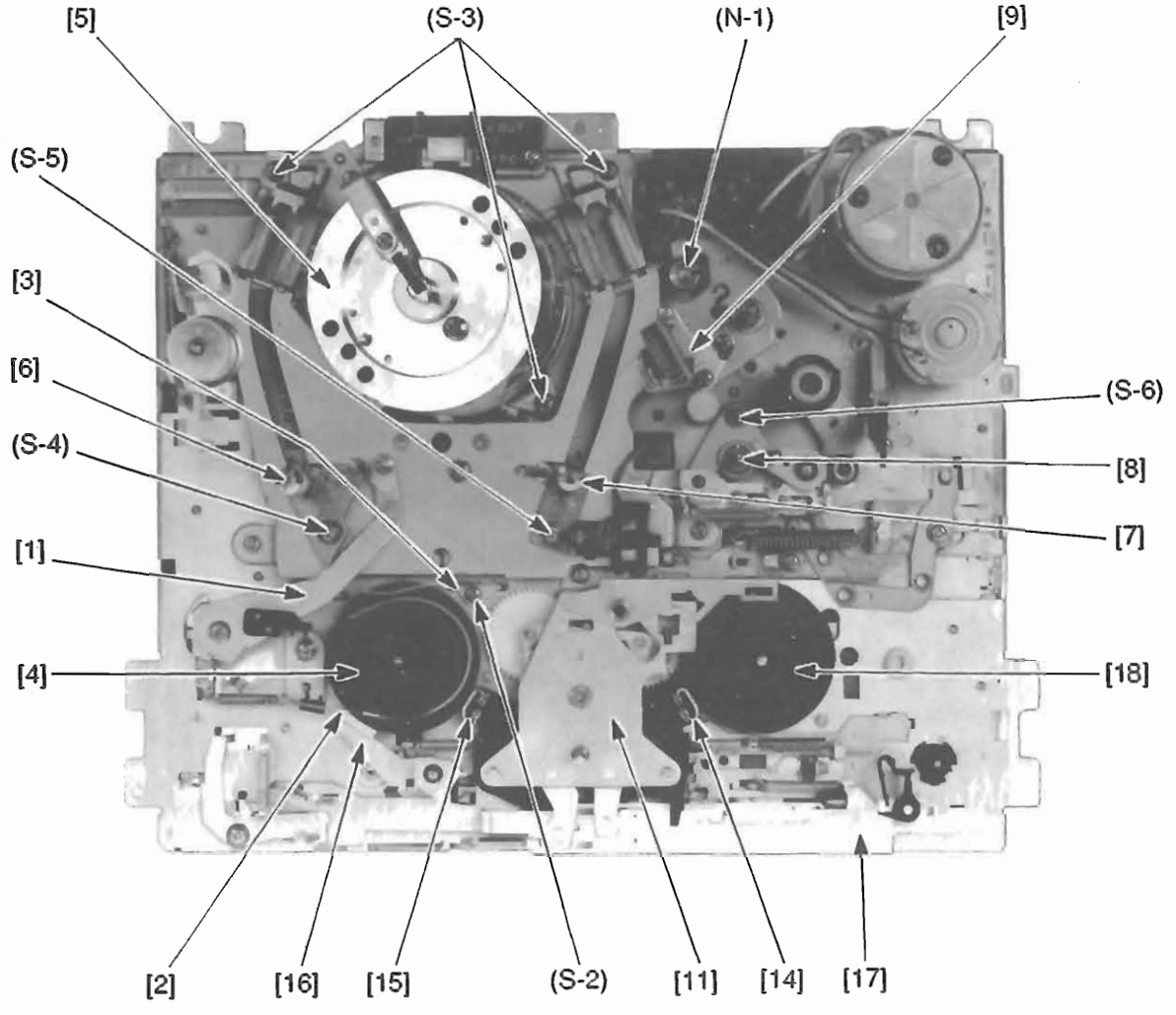


Fig. DM1

BOTTOM VIEW

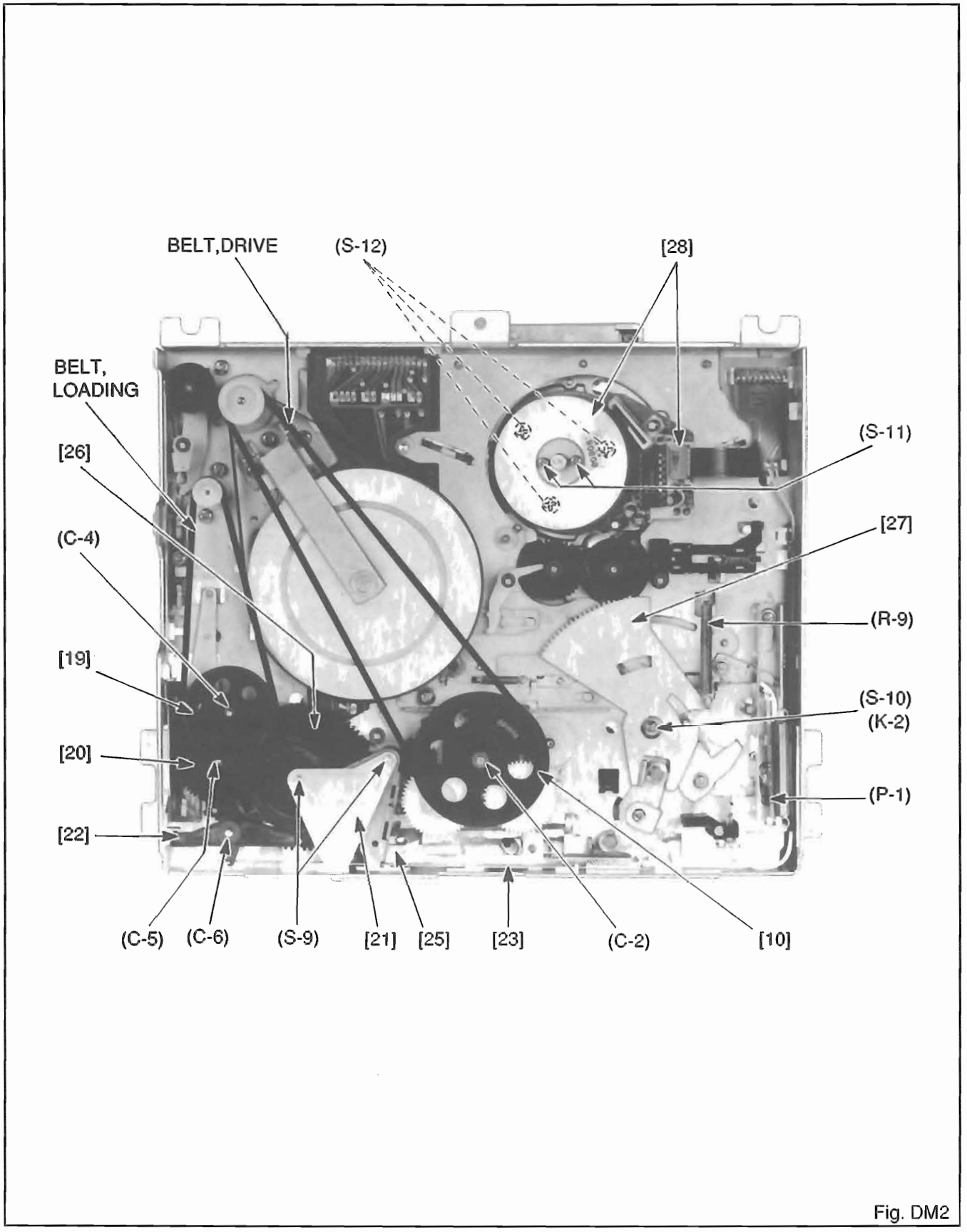


Fig. DM2

Back Tension Band Spring Hooking Position

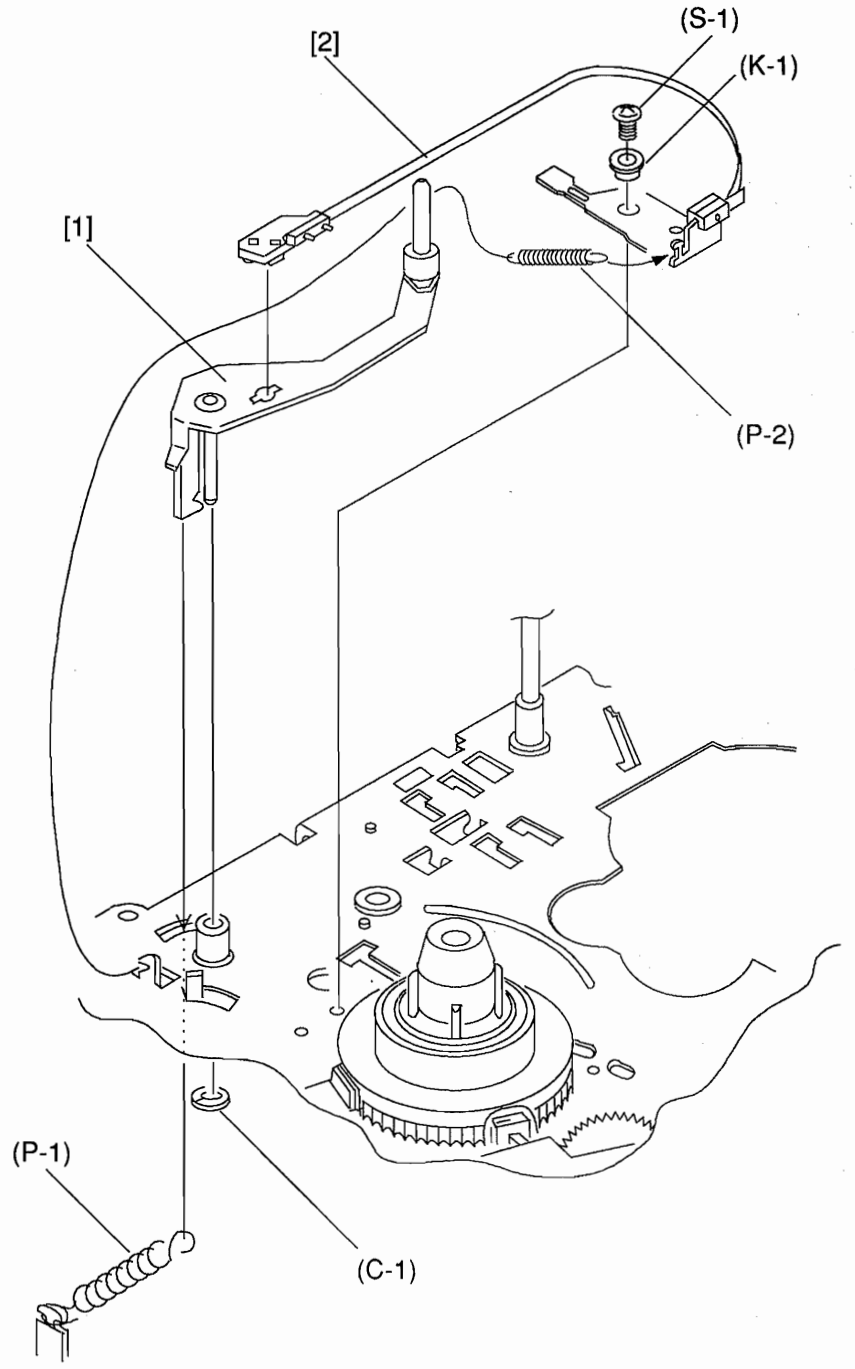
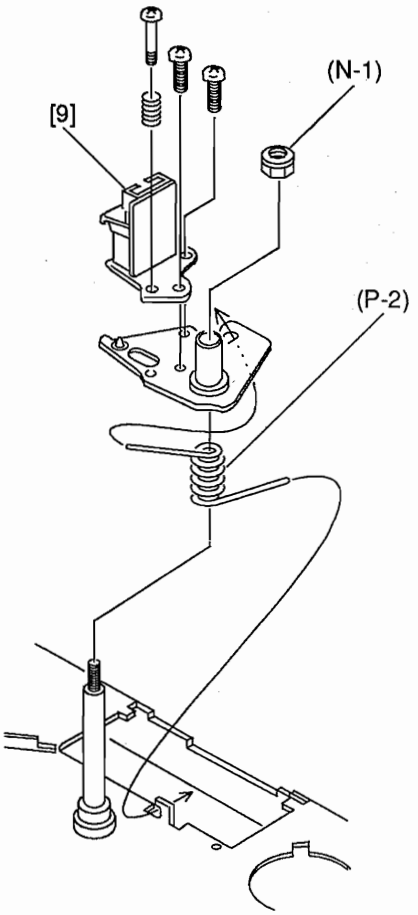
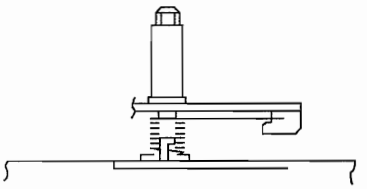


Fig.DM3





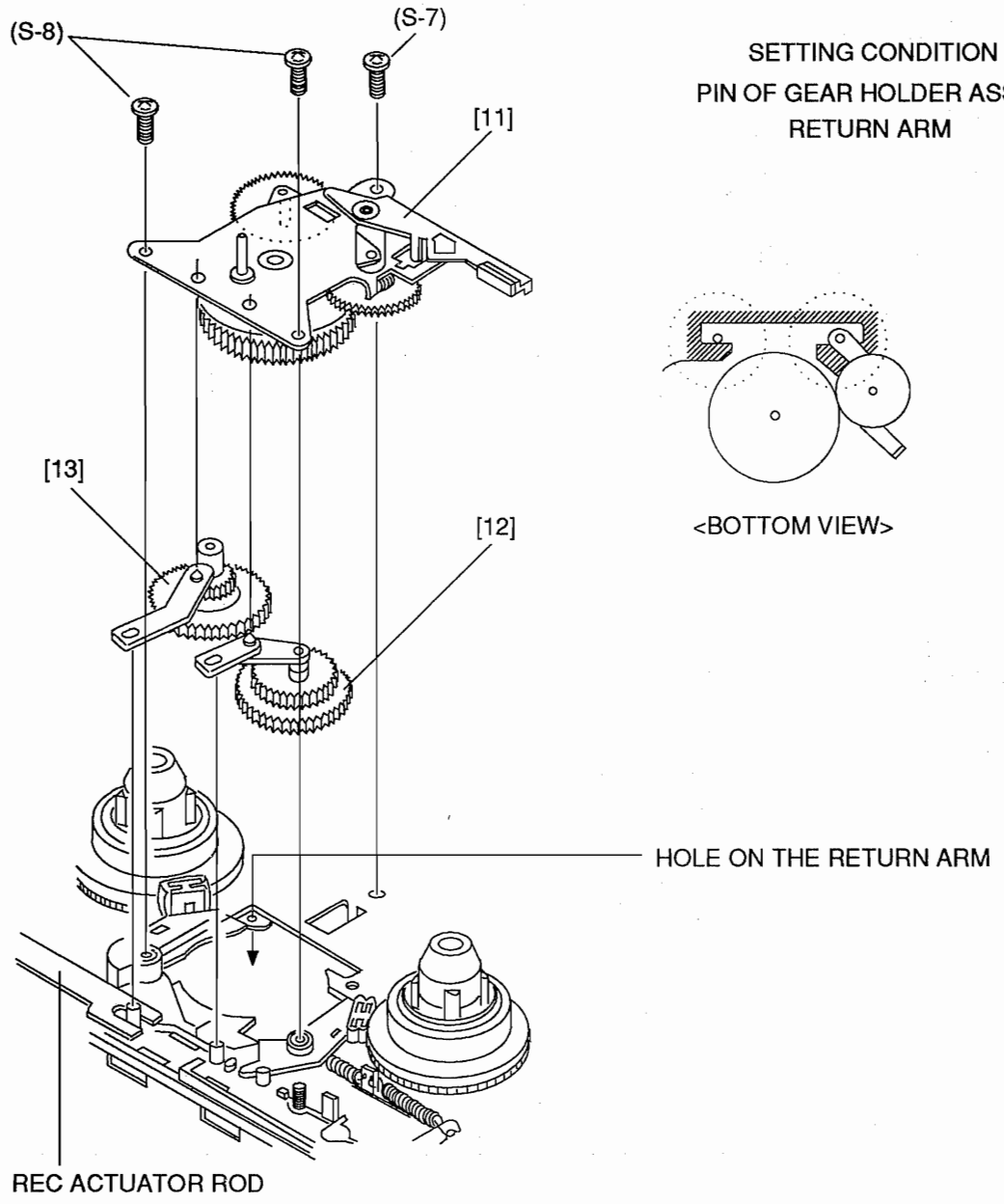
DECK BACK VIEW

Fig.DM4

CONFIRMATION AND ADJUSTMENT

- PLAYBACK SWITCHING POINT
- X VALUE
- ENVELOPE WAVEFORM
- AUDIO OUTPUT LEVEL
- AZIMUTH
- TAPE TRANSPORTATION

Install the Gear Holder Ass'y so that the pin of Gear Holder Ass'y meets with the hole on the Return Arm.



SETTING CONDITION
PIN OF GEAR HOLDER ASS'Y
RETURN ARM

<BOTTOM VIEW>

Fig.DM5

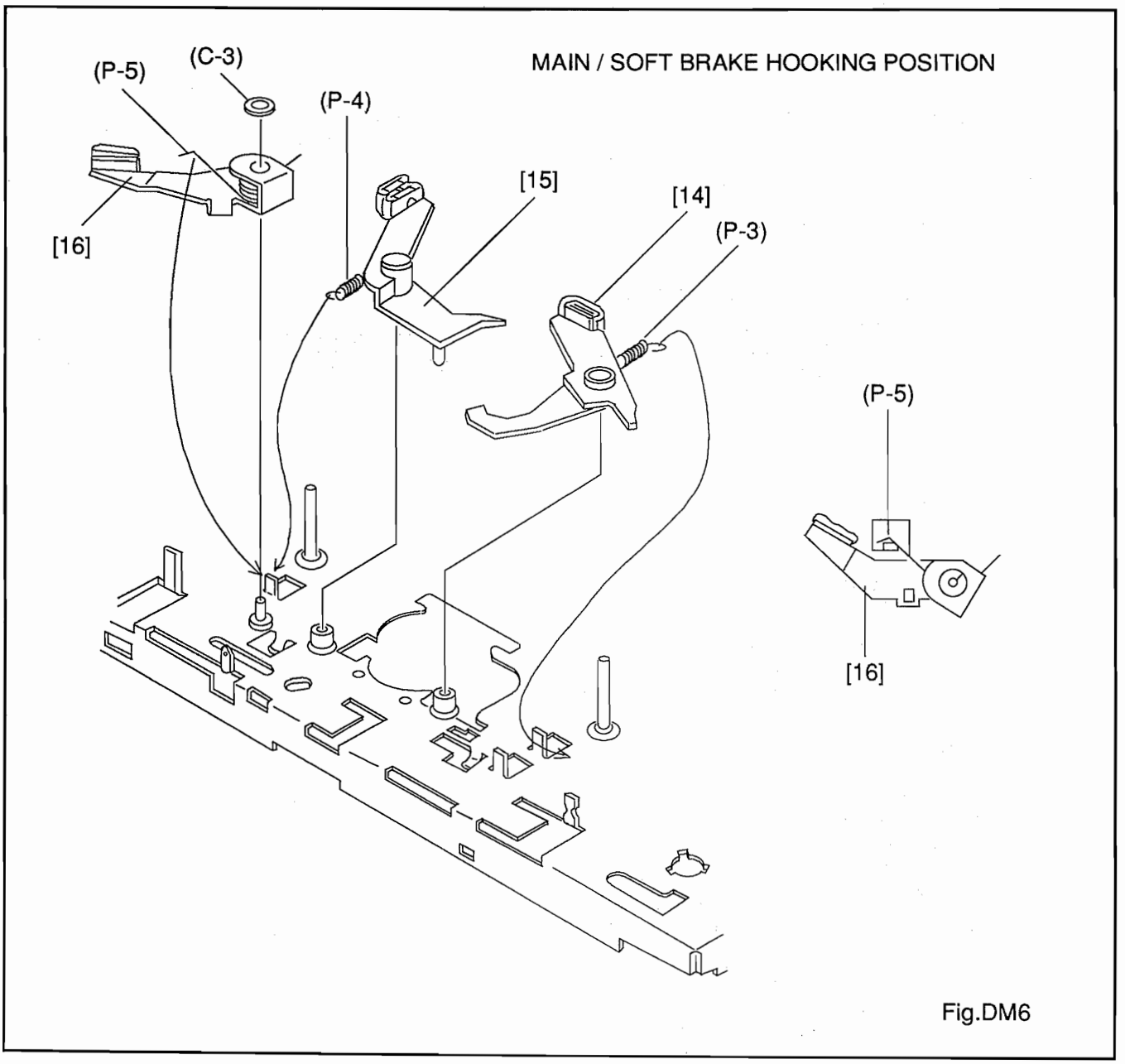
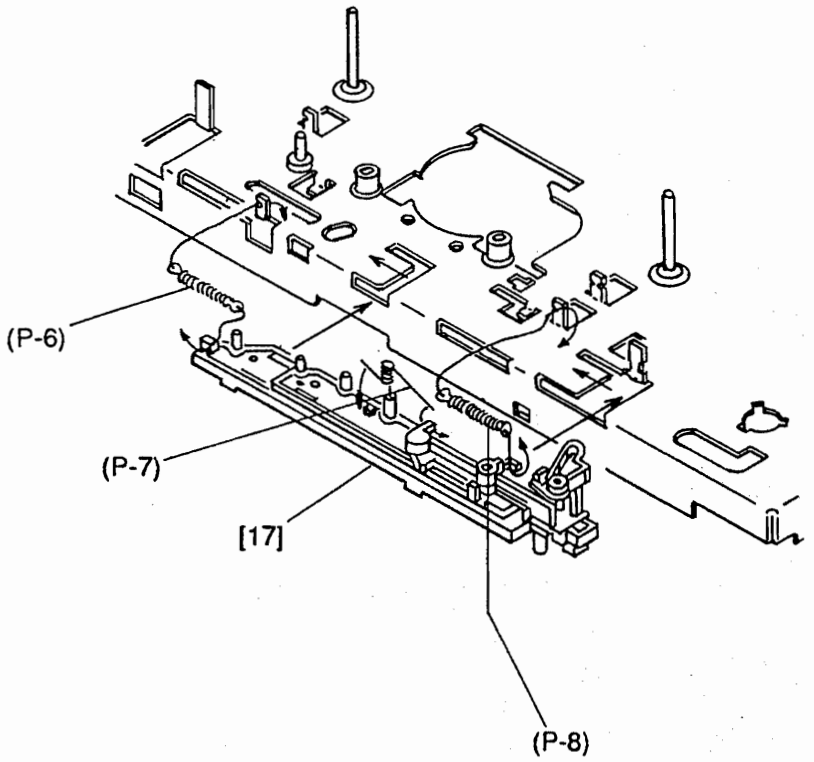


Fig.DM6

BRAKE SPRING HOOKING POSITION

TOP VIEW



BOTTOM VIEW

SETTING CONDITION

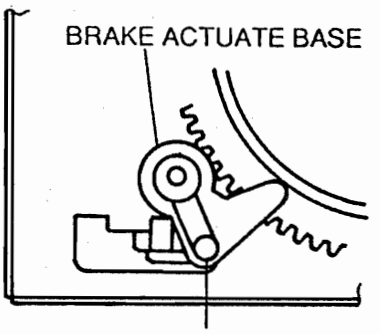


Fig. DM7

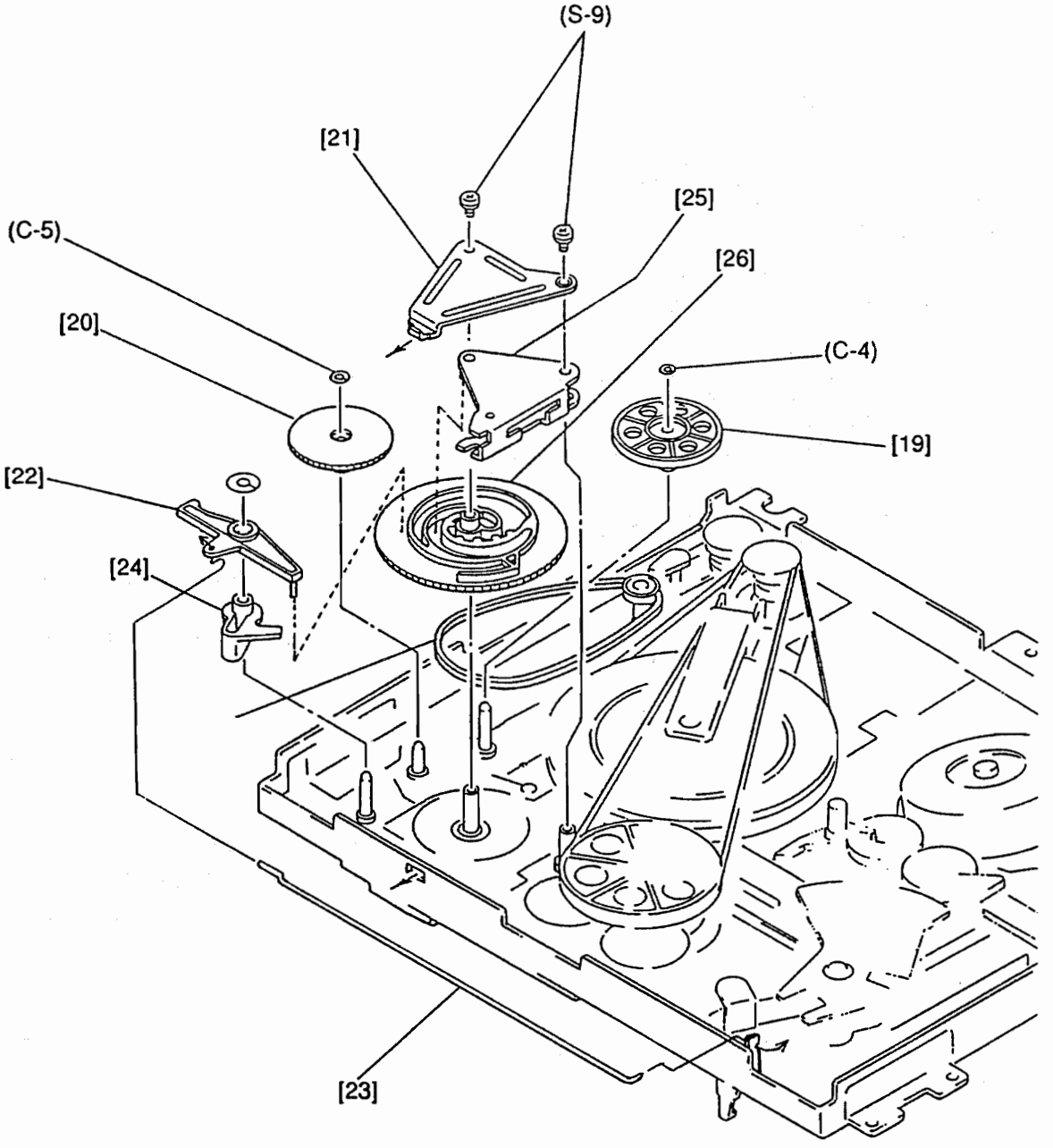


Fig. DM8

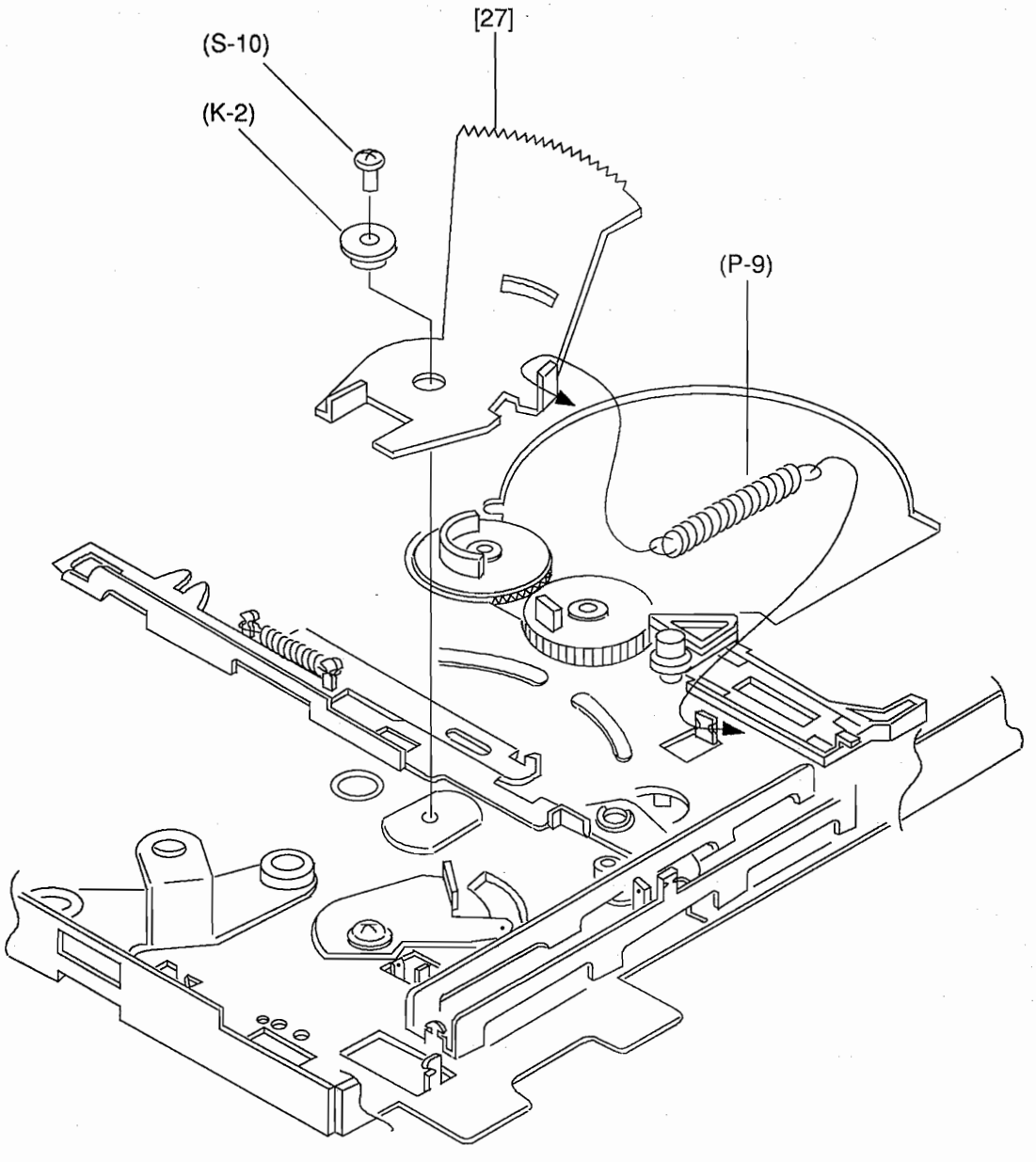


Fig.DM9

ALIGNMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch (Loading Cam). Therefore the relation between the mode select switch (Loading Cam) and the other gear determines all further mechanical movement of the mechanical parts such as levers, gears, pulley and so on. For specific removal and installation procedures, refer to the Disassembly / Assembly Procedures. If these parts are not properly aligned, the unit will be unloaded or stopped. It may result in damage to the mechanical or electrical parts. The over all mechanical condition of the bottom views is shown in Fig. A1.

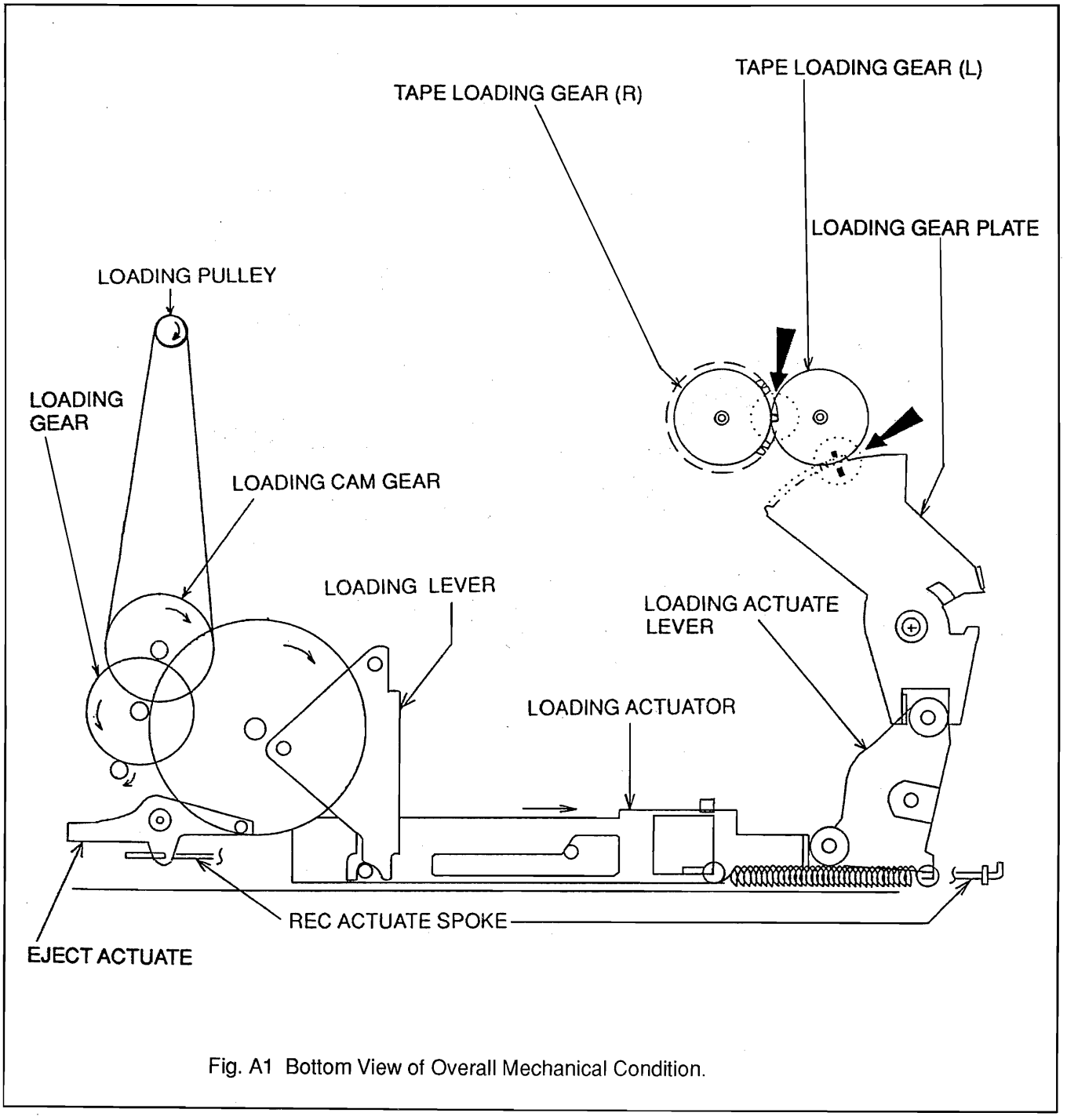


Fig. A1 Bottom View of Overall Mechanical Condition.

ASSEMBLY PROCEDURES OF LOADING CAM AND LOADING LEVER

1). Push the P Cam Lever in the direction of the arrow. (In the opposite direction of Loading Cam Gear)

2). Turn the Cam rising portion on Loading Cam Gear in the direction of Shaft (A), then install Loading Cam Gear onto Shaft (B).

3). Install Loading Lever onto Shaft (C), (D), then turn Loading Cam Gear clockwise or counterclockwise so that the Roller on the Loading Lever aligns with the groove on Loading Cam as shown in Fig. A2.

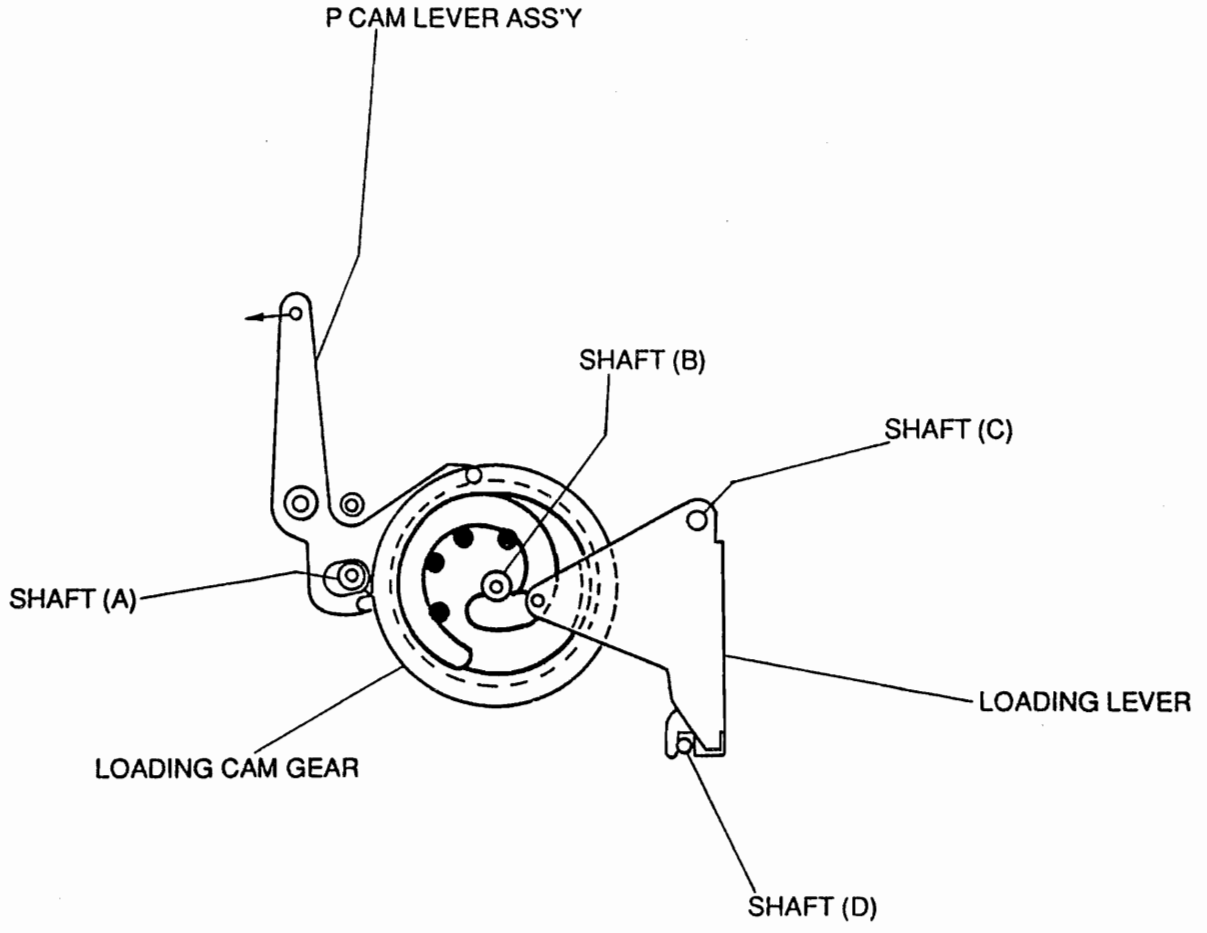


Fig. A2

ALIGNMENT PROCEDURES OF LOADING GEAR PLATE

1). Projection on the Tape Loading Gear (R) aligns with indentation on the Tape Loading Gear (L) as shown in Fig. A1.

2). Install the Loading Gear so that the indentation on the Loading Gear Plate aligns with the indentation on the Tape Loading Gear (L) with Item 1 condition as shown in Fig. A1(Pg. 12-1)

DISASSEMBLY / ASSEMBLY AND ADJUSTMENT OF CASSETTE UP UNIT

This procedure starts with the condition that the Cassette Up Unit has been removed from chassis. When reassembling, perform the step(s) in the reverse order.

STEP / LOC. NO.	START -ING NO.	PART		REMOVAL		INSTALLATION
				FIG. NO.	REMOVE *UNHOOK / UN-LOCK / UNSOLDER	ADJUSTMENT CONDITION
[1]	1	BRACKET ASSEMBLY, CASSETTE LOAD	R	DA1	(S-1), UNSOLDER WIRES	See Setting Condition in Fig. DA1
[2]	1	WORM WHEEL ASSEM-BLY	R	DA2	(R-1)	(+) See Alignment Procedure for Cassette Mechanism Item 8-1 / 8-2
[3]	2	GEAR(R)ASSEMBLY, LIFT	R	DA2	(R-2)	
[4]	3	GEAR(A), SYNCHRONIZE	R	DA2	(R-3)	
[5]	5	LEVER, LIFT	L	DA3	*(P-1),*(L-1)	See Setting Condition in Fig. DA3
[6]	5	GEAR(L) ASSEMBLY, LIFT	L	DA6	(R-4)	See Alignment Procedure for Cassette Mechanism Item 8-3
[7]	6	GEAR(A), SYNCHRONIZE	L	DA6	(R-5)	

LIST OF ABBREVIATIONS:

R=RIGHT, L=LEFT

(S-1)=SCREW(S-1), (R-1)=RETAINING RING (R-1)

(P-1)=SPRING (P-1), (L-1)=LOCK(L-1)

(+), Refer to Deck Exploded Views for Lubrication information.

SETTING CONDITION

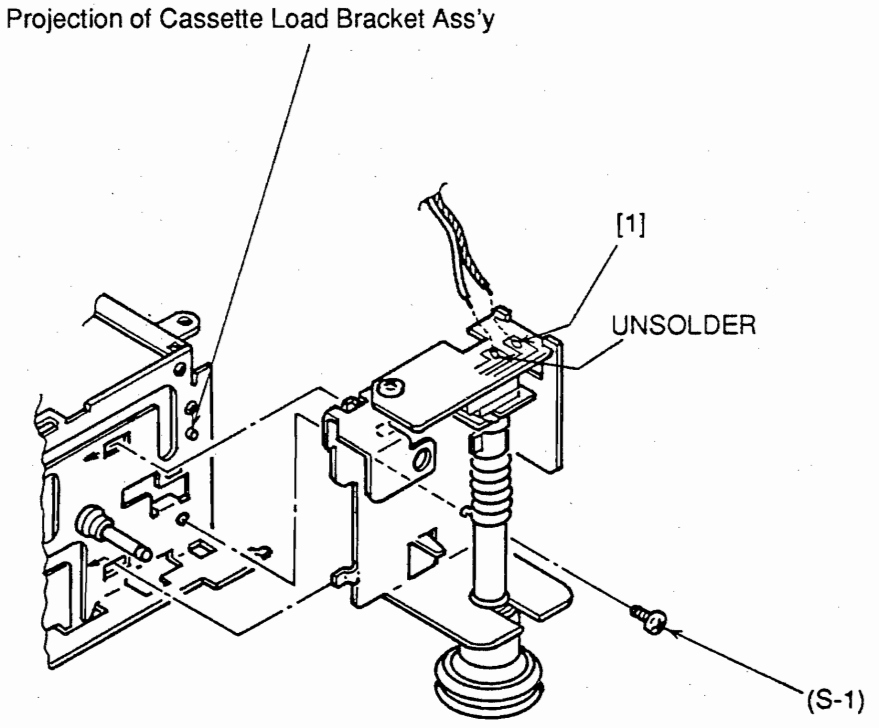


Fig. DA1

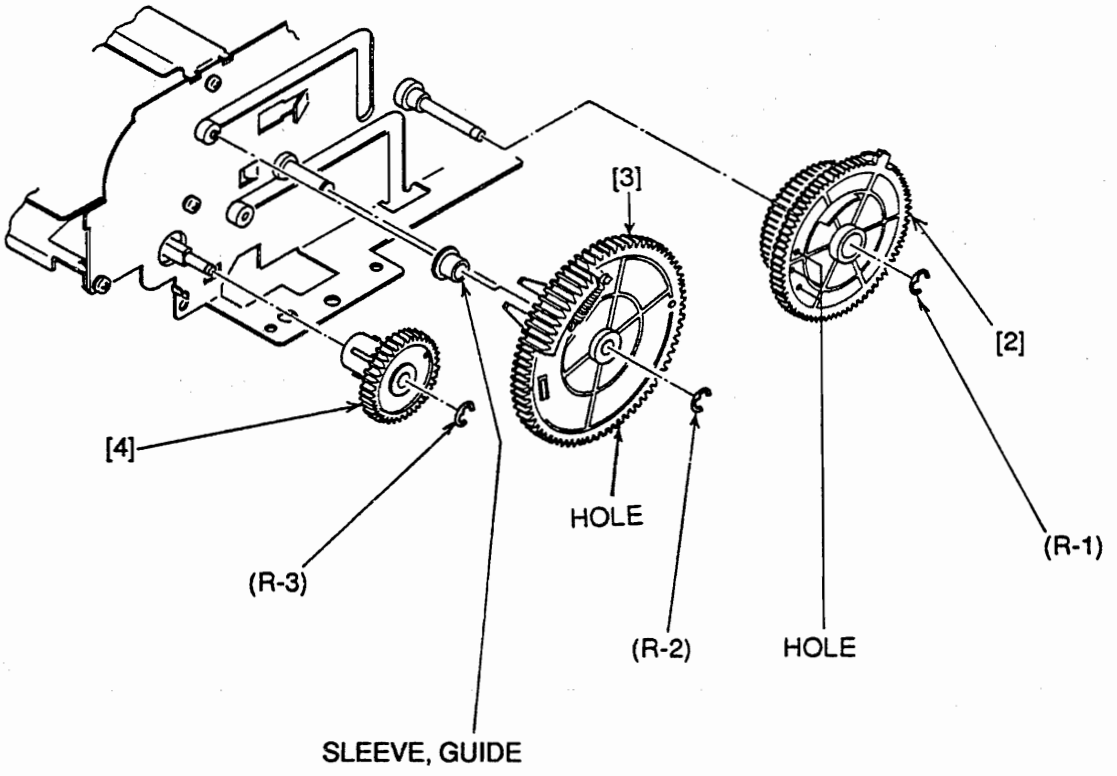
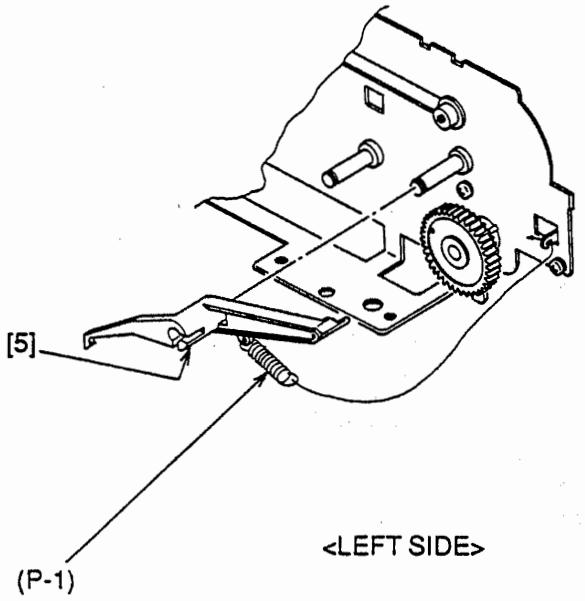


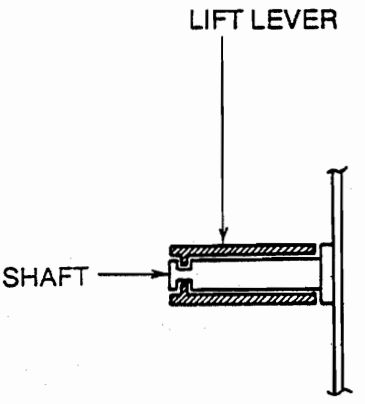
Fig. DA2

LIFT LEVER SPRING HOOKING CONDITION



<LEFT SIDE>

LIFT LEVER HOOKING CONDITION



<SECTION VIEW>

Fig. DA3

ALIGNMENT PROCEDURE OF CASSETTE UP UNIT

ALIGNMENT PROCEDURES OF SYNCHRONIZE GEAR, LIFT GEAR (R) ASS'Y AND FRICTION GEAR ASS'Y

1. Pull the Cassette Holder Ass'y toward the front until it stops.
2. Install the Lift Gear (R) Ass'y so that the projection on the Lift Gear (R) Ass'y aligns with the projection on the Synchronize Gear.
3. Install the Friction Gear Ass'y so that the center hole of Friction Gear Ass'y aligns with the hole of Lift Gear (R) Ass'y as shown in Fig. DA5.

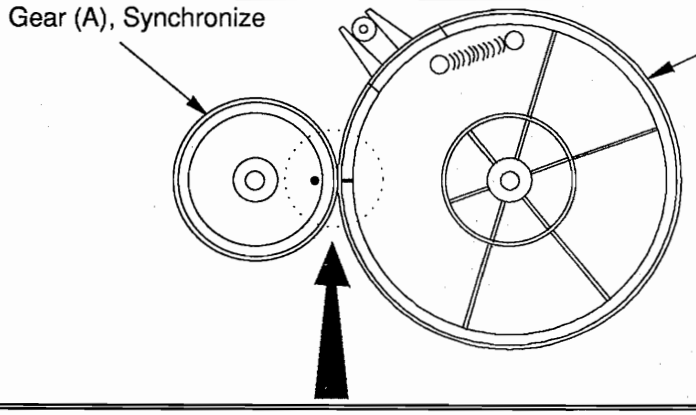


Fig.MA15-1

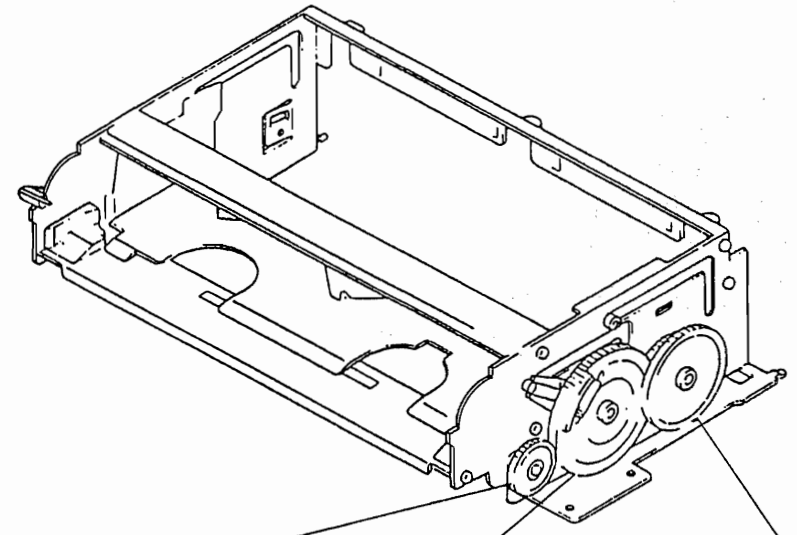


Fig. DA4

WORM WHEEL ASSEMBLY

WHEN ASSEMBLING WORM WHEEL ASSEMBLY, REFER TO FIG. DA5 BELOW.

1. Put the Friction Spring <A> portion into the groove (arrowed portion) on Worm Wheel, then install Friction Spring.
2. Install the Friction Gear and place the Friction Spring <B> portion into the groove (arrowed portion) on Friction Gear, then install Friction Spring.
3. Continue inserting the Friction Gear to the Worm Wheel while twisting clockwise, against the worm wheel to join into one unit.

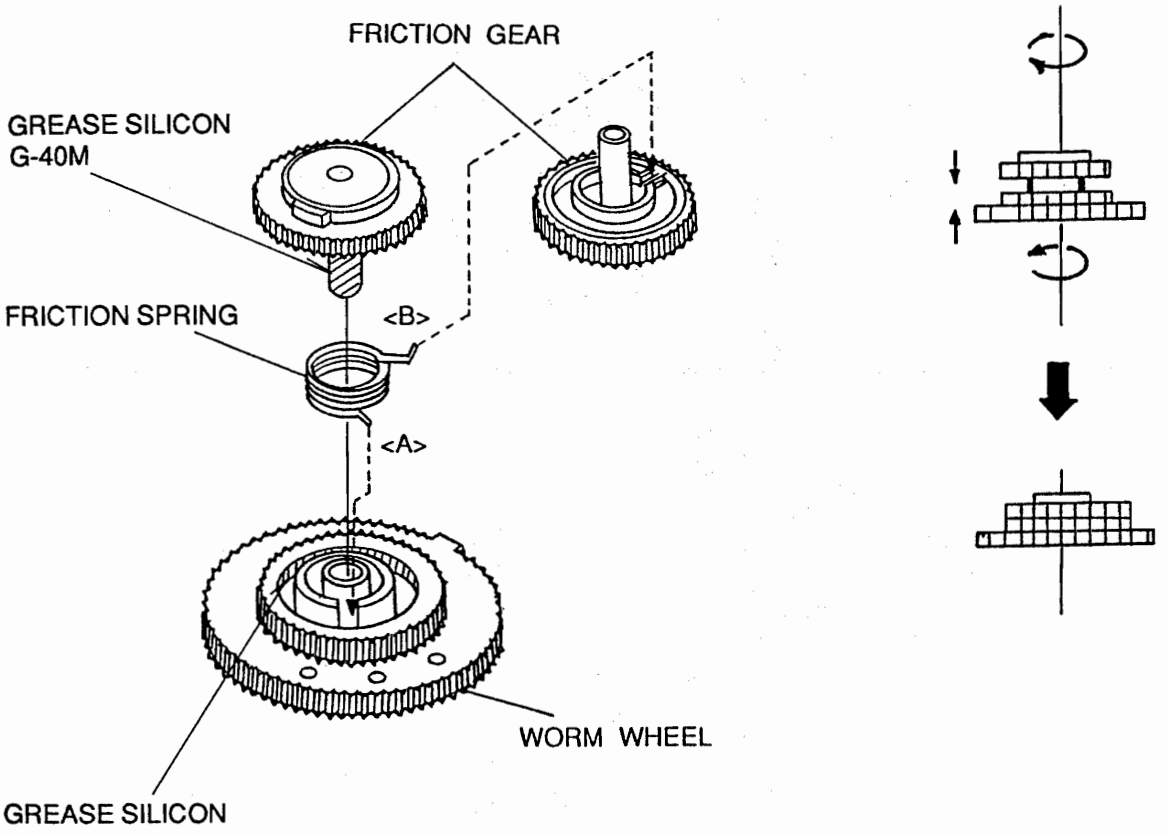


Fig. DA5

LIFT GEAR (L) ASS'Y

ALIGNMENT PROCEDURE OF LIFT GEAR (L) ASS'Y AND SYNCHRONIZE GEAR.

1. Pull the Cassette Holder Ass'y toward the front until it stops.
2. Install the Lift Gear (L) Ass'y so that the indentation of the Lift Gear (L) Ass'y aligns with the projection on the Synchronize Gear.

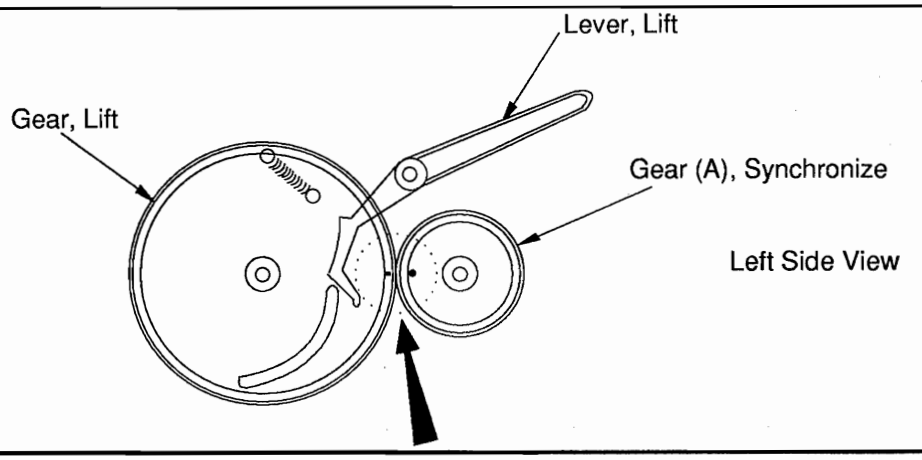


Fig.MA15-2

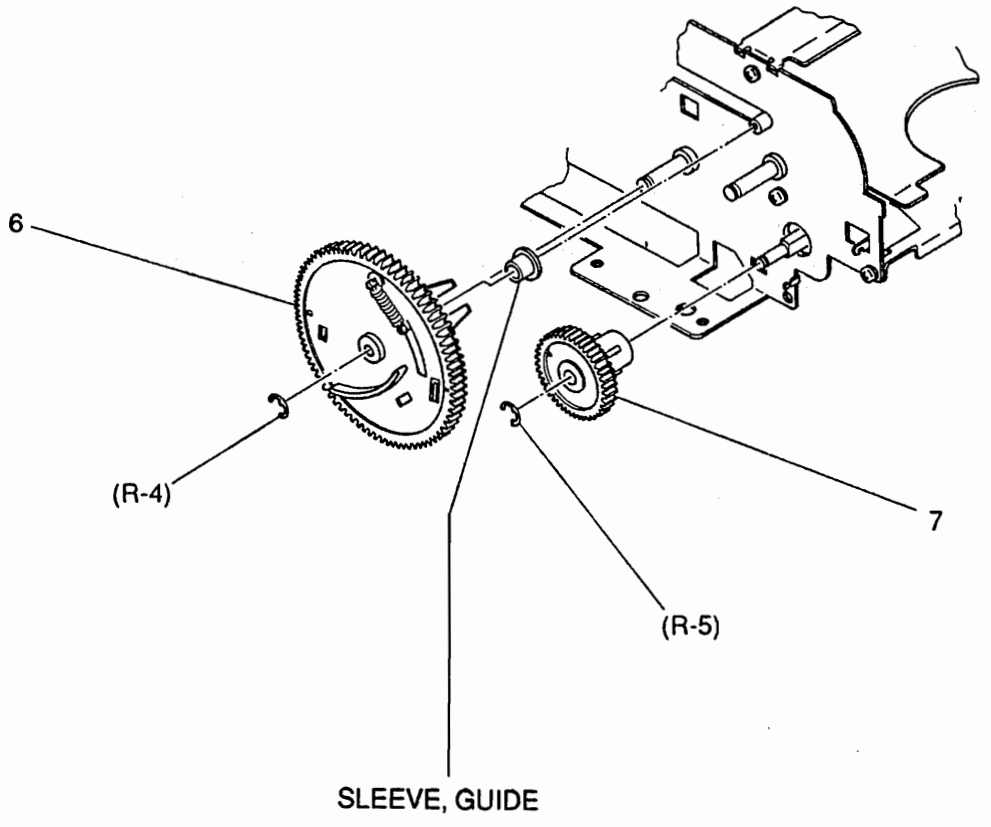


Fig. DA6

ELECTRICAL ADJUSTMENT [TV]

Before all adjustments described this section are attempted, V-HEIGHT and FOCUSING adjustment must be completed.

Test Equipment Reqired

1. NTSC Pattern Generator
2. Oscilloscope 10:1 probe
3. AC Volt Meter (RMS)

1.COLOR PURITY ADJUSTMENT

Purpose :

To get pure color.

Symptom of incorrect adjustment :

If Color Purity Adjustment is incorrect, large areas of color may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
---	Deflection Yoke Purity Magnet	---	Red Color Signal (Video IN)
Equipment	Spec.		
Pattern Generator	See Reference Notes below		

Reference Notes :

1. Set the unit facing east.
2. Operate the unit over 30 minutes before adjustment.
3. Fully degauss the unit using an external degaussing coil.
4. Supply a red color signal.
5. Loosen screw of the Deflection Yoke Clamper and pull the Deflection Yoke back away from the screen.
6. Adjust the Purity Magnets so that a red field is obtained at the center of the screen.
7. Slowly push the Deflection Yoke toward bell of CRT and set it where a uniform red field is obtained.
8. Tighten the clamp screw of the Deflection Yoke.

2. CONVERGENCE ADJUSTMENT

Purpose :

To get proper convergence of red, green and blue beams.

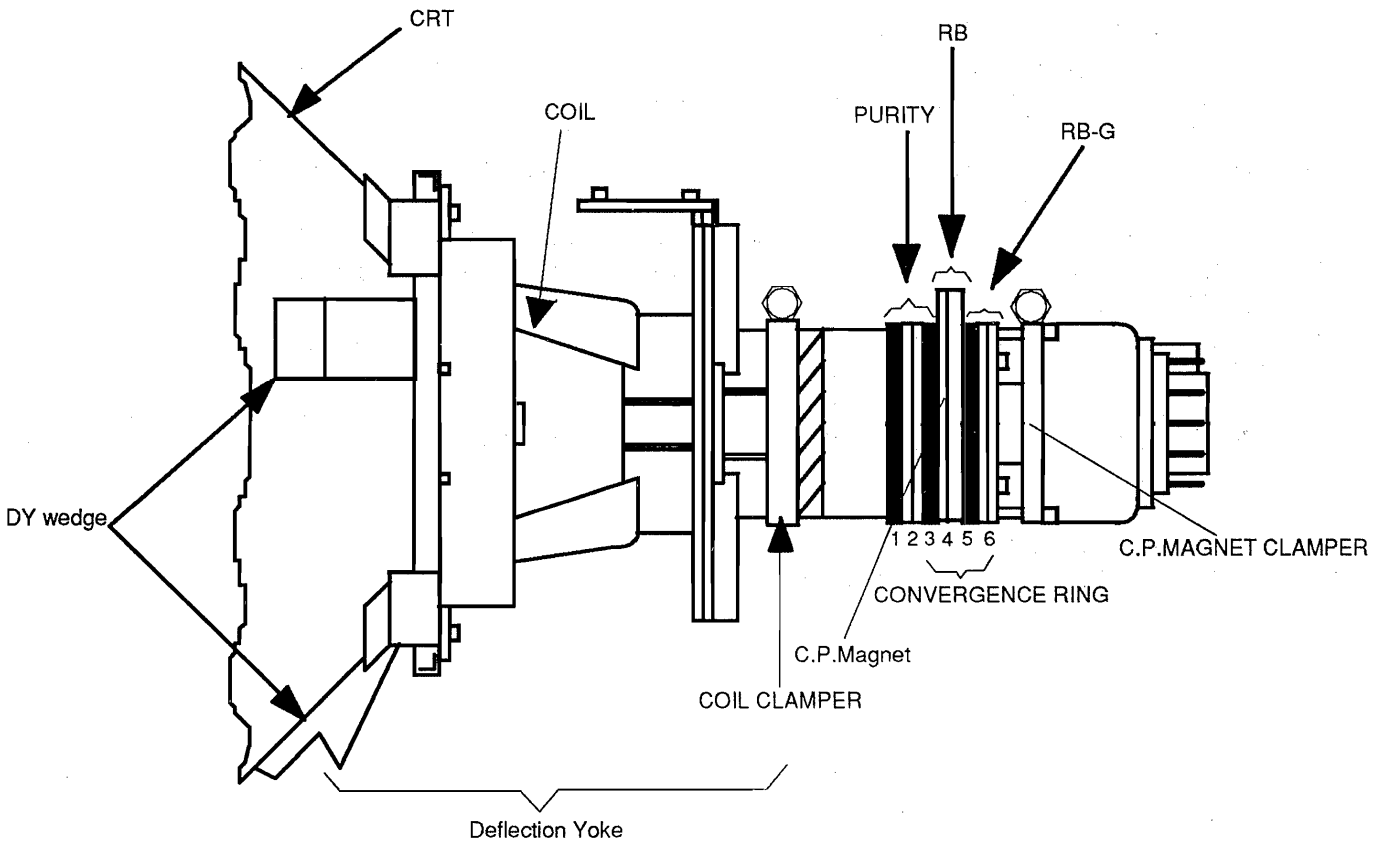
Symptom of incorrect adjustment :

If Convergence Adjustment is incorrect, the edge of White Lellers may be spreaded.

Test Point	Adjustment Point	Mode	Input
---	(R, B) Static Convergence (RB-G) Static Conver-gence, Deflection Yoke	---	Dot Pattern
Equipment	Spec.		
Pattern Generator	See Reference Notes below		

Reference Notes :

1. Loosen the Convergence Magnet Clamper and align red with blue dots at the center of the screen by rotating (R, B) Static Convergence Magnets.
2. Align red / blue with green dots at the center of the screen by rotating (RB-G) Static Convergence Magnet.
3. Fix the Convergence Magnets by tightening the clamper.
4. Remove the DY wedges and slightly tilt the Deflection Yoke horizontally and vertically to obtain the best overall convergence.
5. Fix the Deflection Yoke pushing toward the screw.



3.WHITE BALANCE ADJUSTMENT

Purpose :

To mix red, green and blue beams correctly for pure white.

Symptom of incorrect adjustment :

White becomes bluish or reddish.

Test Point	Adjustment Point	Mode	Input
Q1702 (collector) GND	VR9(TINT) VR10 (COLOR) VR11 (CONTRAST) VR12 (BRIGHT) VR1001 (RED) VR1002 (GREEN) VR1003 (BLUE) VR1004 (R. DRIVE) VR1005 (B. DRIVE)	---	100% Video Signal
Equipment	Spec.		
Pattern Generator Oscilloscope	170V DC See Reference Notes below		

Reference Notes :

1 Set the Screen Control to the middle position.
2 Turn the Red (VR1001) and Blue (VR1003) Low Light controls to minimum position, and turn the Green (VR1002) Low Light control to center.
3 Turn the B Drive (VR1005) and R Drive (VR1004) controls to center.
4 Receive 100% Video Signal.
5 Turn the Screen Control fully counterclockwise.
6 Set the Sub-Brightness Control (SFR2) to middle position, then turn the Bright Control (VR12) and Contrast Control (VR11) and Color Control (VR10) fully counterclockwise.
7 Set the Service Switch (SW1) to service position (display picture becomes horizontal bar).
8 Connect Oscilloscope between Q1702 Collector and Ground, and confirm the 170V DC.
9 Slowly turn the Screen control to the point where Green (horizontal bar) just illuminates.
10 Turn the Low-Light Control (B, R) to get White horizontal bar (3 colors of the same brightness).
11 Reset the Service Switch (SW1) to the Normal position and Brightness Control (VR12) to the middle position. Hereafter, adjust the white balance using the White Balance Meter.
12 Adjust Blue (VR1005) and Red (VR1004) Drive controls to obtain a uniform white raster. (Adjust color temp. to 8500° K at White 25% and White 75%)
13 Check the Black and White picture detail for proper black and white rendition from lowlights to highlights.
14 After adjustment, set Tint Control (VR9), Bright Control (VR12), Contrast Control (VR11) and Color Control (VR10) to center.

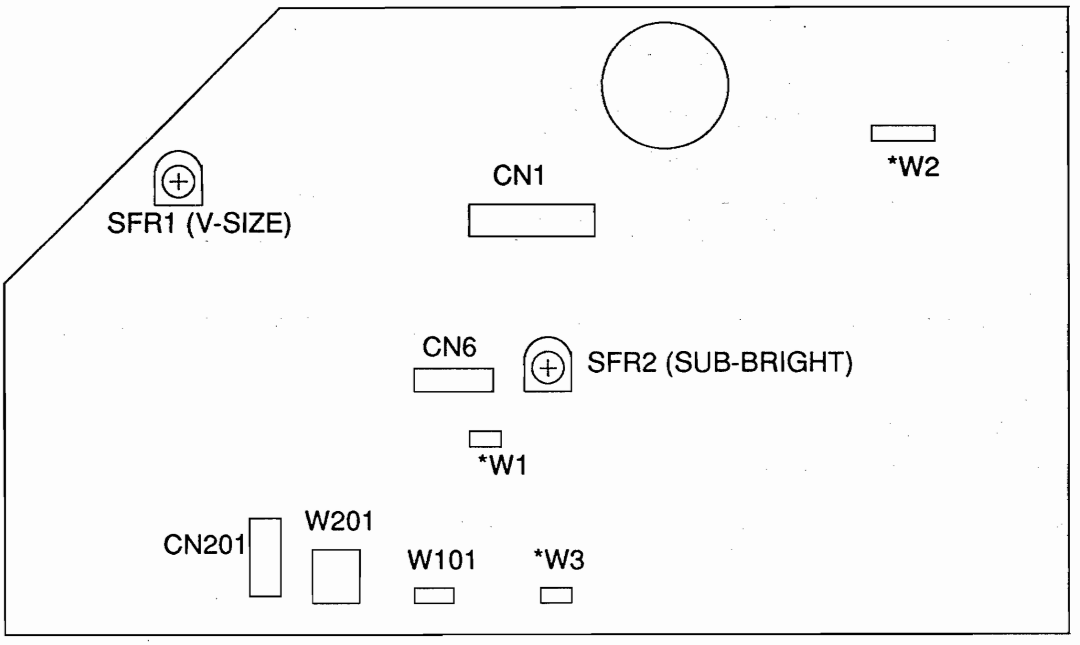
Note :

VR10, VR11, VR12: Control C.B.A.
VR1001, VR1002, VR1003, VR1004: CRT C.B.A.

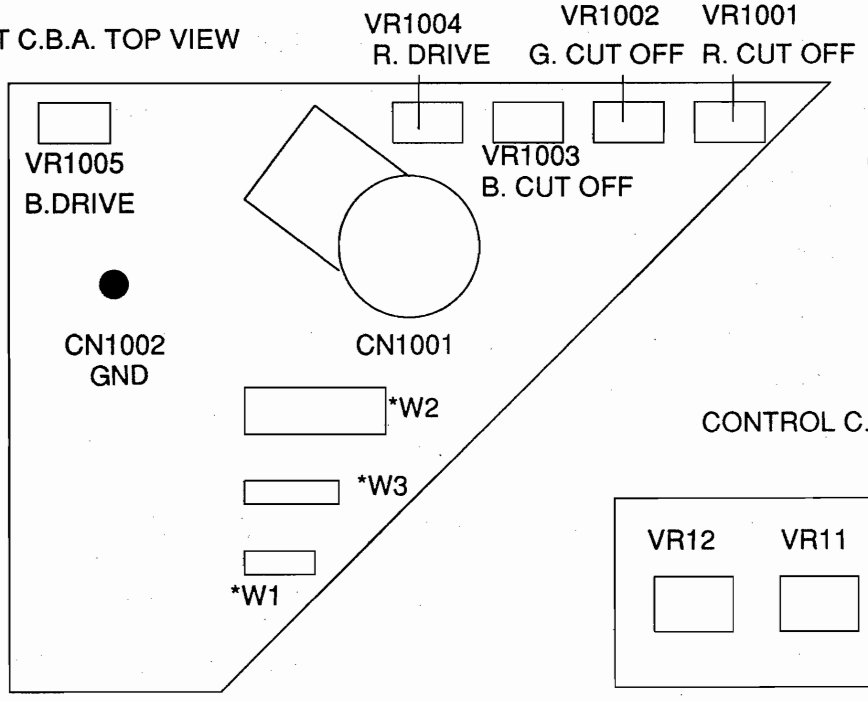
ALL C.B.A.S ARE DRAWN AS INSTALLED IN THE CABINET.

CONNECTORS MARKED * ARE SOLDERED.

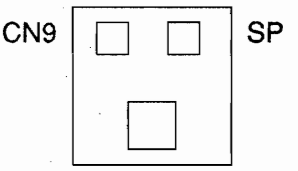
MAIN C.B.A. TOP VIEW



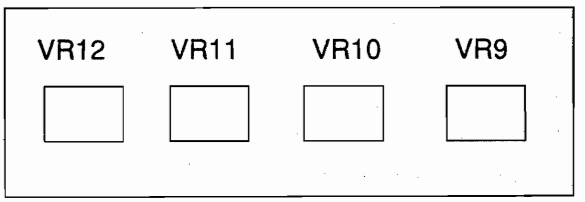
CRT C.B.A. TOP VIEW



EARPHONE C.B.A. TOP VIEW



CONTROL C.B.A. TOP VIEW



4.FOCUS ADJUSTMENT

Purpose :

To get correct focus .

Symptom of incorrect adjustment :

If Focus Adjustment is incorrect, blurred image is shown on the display.

Test Point	Adjustment Point	Mode	Input
---	VR11 (CONTRAST) VR12 (BRIGHTNESS) FBT (Focus Control)	---	---
Equipment	Spec.		
---	See Reference Notes below		

Reference Notes :

1. Set the Contrast control (VR11) to maximum and Bright control (VR12) to the middle position.
2. Adjust the Focus Control of FBT for a sharp and clear picture.

Note :

VR11, VR12: Control C.B.A.

FBT (Focus Control) : Main C.B.A.

5.SUB-BRIGHTNESS ADJUSTMENT

Purpose :

To get proper brightness.

Symptom of incorrect adjustment :

If Sub-Brightness is incorrect, proper brightness cannot be obtained by adjusting the Bright Control.

Test Point	Adjustment Point	Mode	Input
TP1 TP2	SFR2 (SUB-BRIGHTNESS) VR9 (TINT) VR10 (COLOR) VR11 (CONTRAST) VR12 (BRIGHT)	---	Color Bar Signal
Equipment	Spec.		
Pattern Generator AC Voltmeter	0.1mV (between TP1 and TP2) 100μA (Beam Current)		

Reference Notes :

1. Set Bright Control (VR12), Contrast Control (VR11), Color Control (VR10), Tint Control (VR9) fully counterclockwise.
2. Adjust the Sub-brightness control (SFR2) to get 0.1mV at both sides of R42 (between TP1 and TP2). At this moment , beam current becomes 100μA.
3. After adjustment, set Bright Control (VR12), Contrast Control (VR11), Color Control (VR10) and Tint Control (VR9) to center.

Note :

SFR2, TP1, TP2: Main C.B.A.

VR9, VR10, VR11, VR12: Control C.B.A.

6.V-HEIGHT

Purpose :

To get correct vertical height of screen image.

Symptom of incorrect adjustment :

If V-Height is incorrect, vertical height of image on the screen may not be properly displayed.

Test Point	Adjustment Point	Mode	Input
---	SFR1 (V-SIZE)	---	Crosshatch Pattern
Equipment	Spec.		
Pattern Generator AC Voltmeter	90% ratio of Display height		

Note :

SFR1: Main C.B.A.

ELECTRICAL ALIGNMENT INSTRUCTIONS [VCR]

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed.
Also, do not attempt these adjustments unless the proper equipment is available.

TEST EQUIPMENT REQUIRED

1. Oscilloscope : Dual-trace with 10:1 probe, V-Range : 0.001~50v / Div., F-Range : AC~DC-20MHz
2. TV Monitor
3. NTSC Pattern Generator (Color bar with 100% white)
4. AC Voltmeter (RMS)
5. Alignment Tape (F8-A, Blank Tape)
6. Plastic tip adjustment driver and Non-metal driver

HEAD SWITCHING POSITION ADJUSTMENT (PG SHIFTER)

Purpose :

Determine the Head Switching Point during Playback.

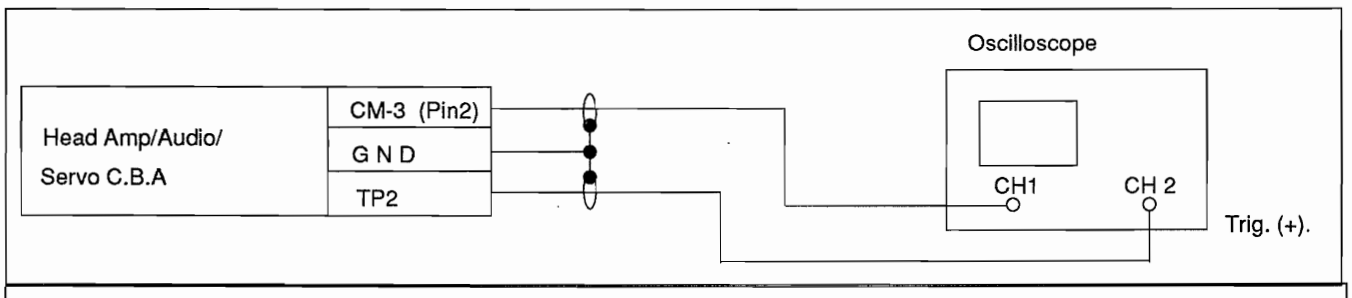
Symptom of incorrect adjustment :

May cause Head Switching Noise or Vertical Jitter in the picture.

Note:

CM-3(Pin1) TP2, VR401: Head Amp / Audio / Servo C.B.A.

Test Point	Adjustment Point	Mode	Input
CM-3(Pin2) TP2 (RF-SW) GND	VR401 (Switching Point)	PLAY (SP)	-
Tape	Equipment	Spec	
Alignment Tape F8-A Color bars	Oscilloscope	T=6.5±1H (412.7us ±60us)	



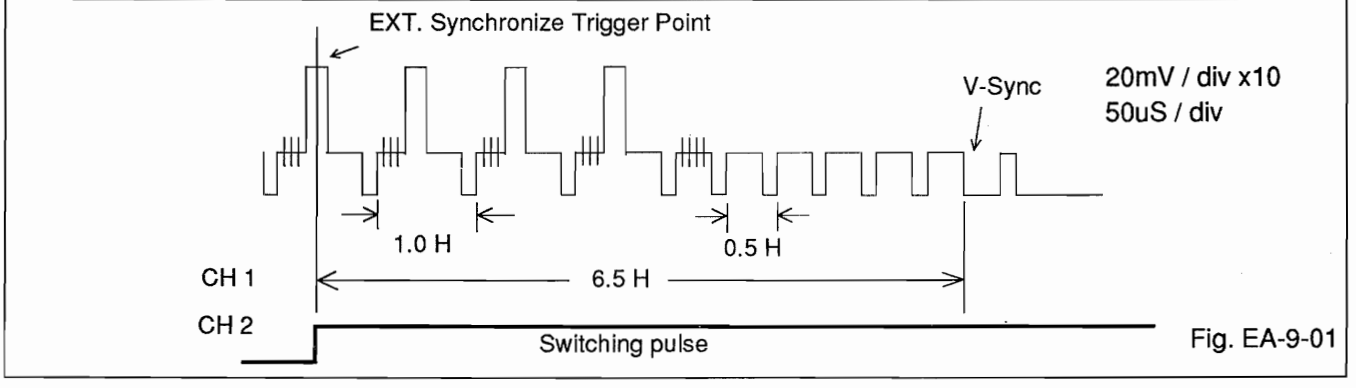


Fig. EA-9-01

CONTROL PRESET ADJUSTMENT

Purpose :

VHS Interchangeability

Symptom of incorrect adjustment :

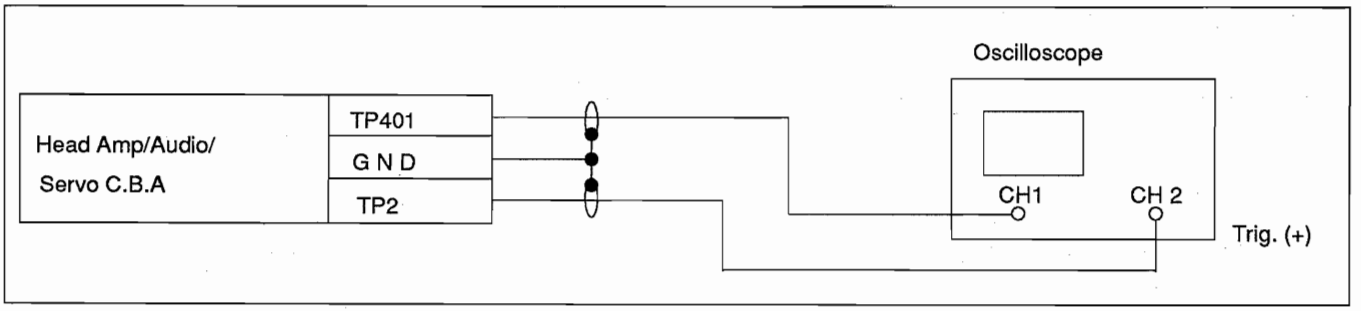
May cause noise to appear on the picture at center detent tracking position in Playback mode.

Note:

TP401, TP2, VR402 :Head Amp / Audio / Servo C.B.A.

Test Point	Adjustment Point	Mode	Input
TP401 (CTL) TP2 (RF-SW) GND	VR402 (CLT)	PLAY (SP)	-
Tape	**Equipment**	**Spec**	
Alignment Tape F8-A Color bars	Oscilloscope	0 ±0.05 ms/div See Fig. EA-9-02	

1.Connect the scope CH1 to TP401. Connect CH2 to TP2 and use CH2 as the trigger.
2.Set Tracking control to the center detent position.
3.Expand the scope and adjust VR402 until CH1 falling edge is aligned with the rising edge of CH2. (See Fig. EA-9-02).



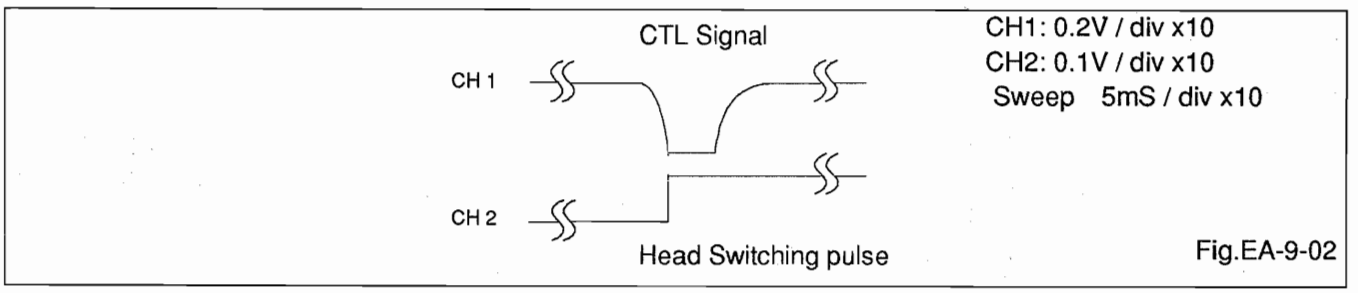


Fig.EA-9-02

REC. CURRENT ADJUSTMENT

Purpose :

Set the optimum Record Chroma and Luminance Levels.

Symptom of incorrect adjustment :

If the Record Chroma Level is too high, beats may appear in the picture, and if too low, the Chroma S/N Ratio will be lower.

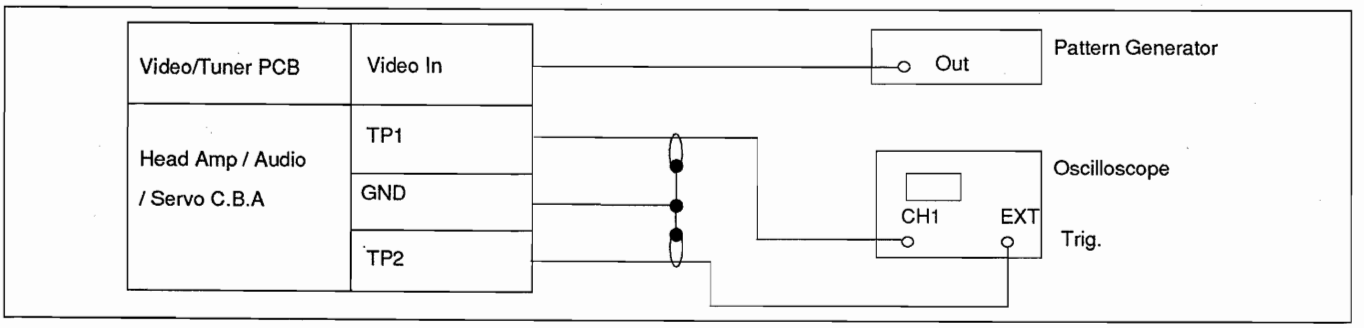
If the Record Luminance Level is too high, Video may overload, and if too low, S/N Ratio deteriorates.

Note:

TP1, TP2, VR1, VR2: Head Amp / Audio / Servo C.B.A.

Test Point	Adjustment Point	Mode	Input
TP1 (REC CRR) TP2 (RF-SW) GND	VR1 (C-REC) VR2 (Y-REC)	REC	NTSC Color Bar Pattern W/100% White Window
Tape	Equipment	Spec	
Blank Tape	NTSC Pattern Generator Oscilloscope	Chroma-40 ±5mVp-p (Cyan) Luminance- 190 ±10mVp-p Refer to Fig.EA-9-03.	

1. Connect scope to TP1 and trigger. Turn VR2 fully CCW to reduce the Luminance record level to minimum.
2. Connect scope to TP1 and use TP2 as a trigger. Adjust VR1 until the CYAN BAR becomes 40 ±5mVp-p.
3. Change the scope sweep to 2ms/div and use TP2 as a trigger. Adjust VR2 until the Luminance Record Level is 190 ±10mVp-p.



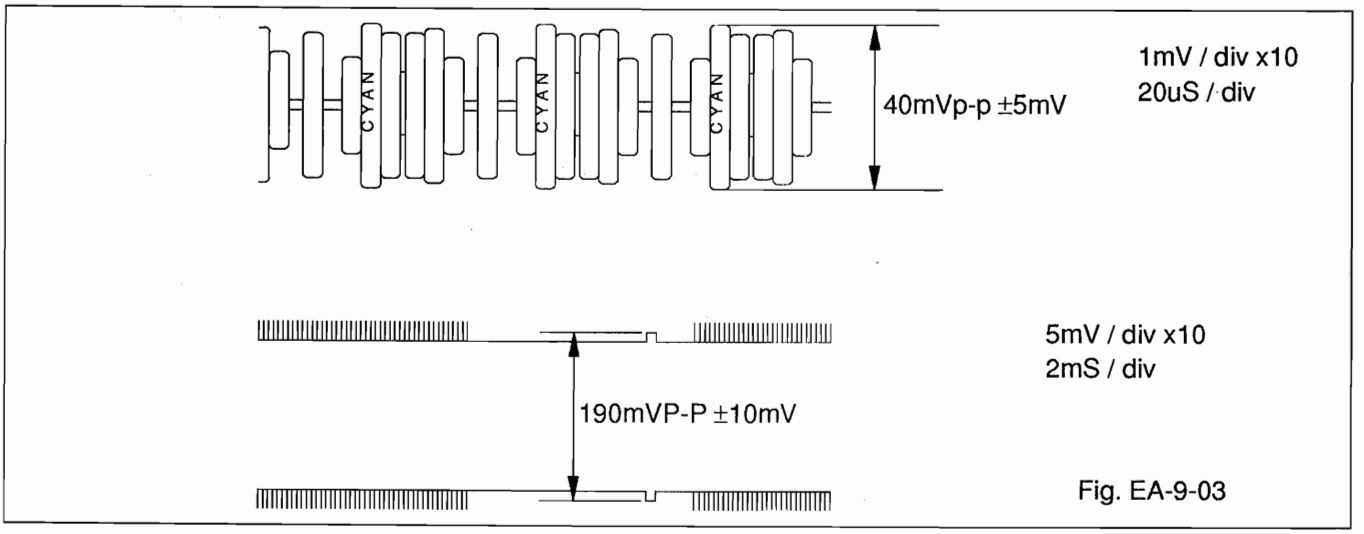


Fig. EA-9-03

AUDIO REC BIAS ADJUSTMENT

Purpose:

Set Optimum Record Audio Bias Level.

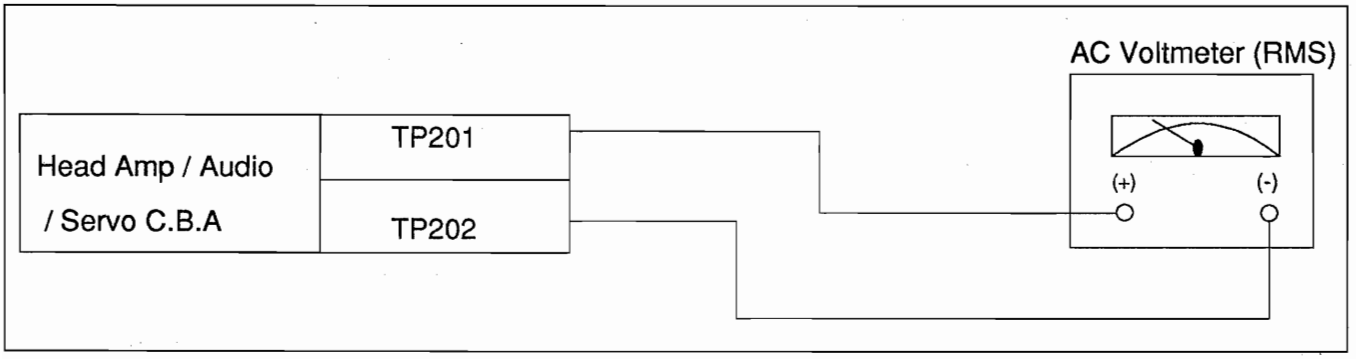
Symptom of Misadjustment:

If Audio Bias is too high, the Frequency Response deteriorates. If set too low, it may cause sound distortion.

Note:

TP201, TP202, VR201 :Head Amp / Audio / Servo C.B.A.

Test Point	Adjustment Point	Mode	Input
TP201 (Bias+) TP202 (Bias-)	VR201(BIAS)	REC (SP)	-
Tape	Equipment	Spec	
Blank Tape	AC millivoltmeter or Oscilloscope	23 ±1mV RMS or 65 ± 3mV p-p	



E-E LEVEL ADJUSTMENT

Purpose:

Set the optimum Luminance Output Level.

Symptom of incorrect adjustment:

If the E-E Level is too high, TV may overload. If the Level is too low, the S/N Ratio deteriorates.

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CM-3(Pin2)	VR51 (AGC) (Y/C PROCESS C.B.A.)	E-E	---	Fig. EA-9-16

1.Connect the equipment as shown in Fig. EA-9-16.
2.Input Color Bar signal with 100% white to Video Input.
3.Adjust VR51 so that the video level becomes
A) 1.0Vp-p ±0.05V (Connected to TV unit only).
B) 2.0Vp-p±0.1Vp-p unterminated (TV/VCR Combination)

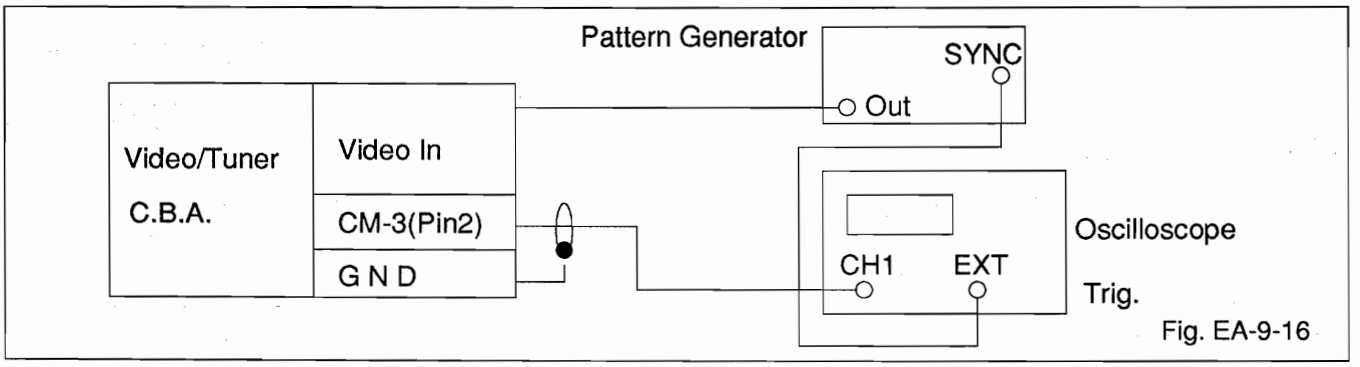


Fig. EA-9-16

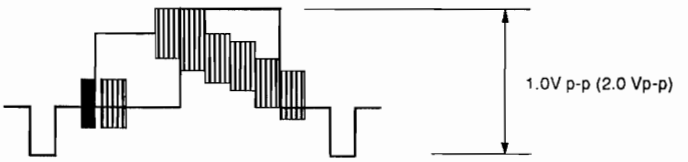


Fig. EA-9-07

P.B. OUTPUT LEVEL ADJUSTMENT

Purpose:

Set the optimum Luminance Output Level.

Symptom of incorrect adjustment:

If the P.B. Output Level is too high, TV may overload. If the Level is too low, the S/N Ratio deteriorates.

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
CM-3 (Pin2)	VR54 (P.B.Level) (Y/C PROCESS C.B.A.)	PLAY	F8-A	Fig. EA-9-17

1.Connect the equipment as shown in Fig.EA-9-17.

2.Adjust VR54 so that the video level becomes

A) 1.0Vp-p ±0.05V (Connected to TV unit only).

B) 2.0Vp-p±0.1Vp-p (TV/VCR Combination)

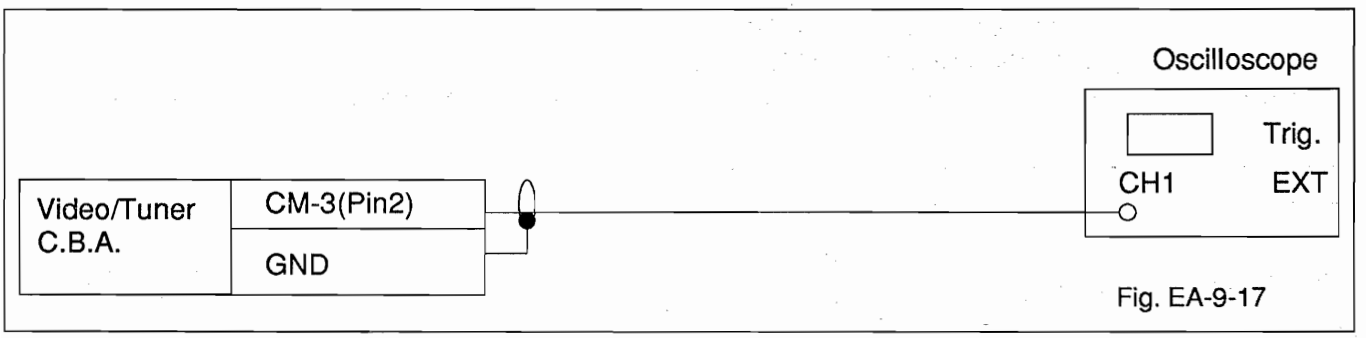


Fig. EA-9-17

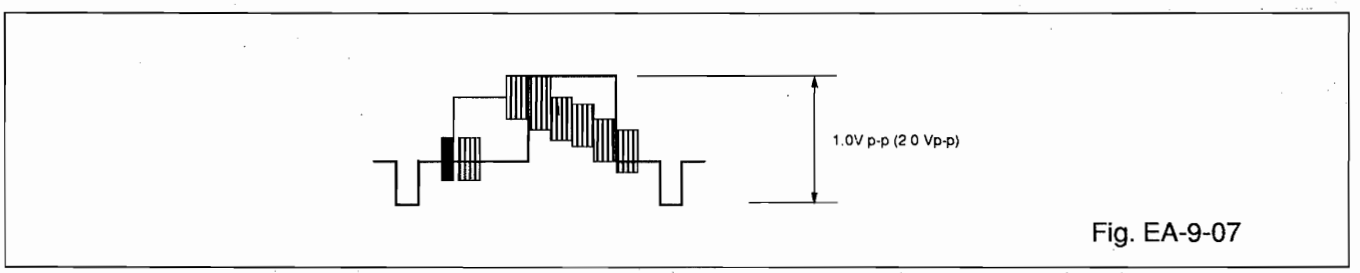


Fig. EA-9-07

NOISE CANCEL ADJUSTMENT

Purpose:

Improve the overall S/N Ratio, especially in the Low Frequency Component.

Symptom of incorrect adjustment:

The S/N Ratio will be below.

Note: Adjust the Noise Cancel for choice (1) or (2).

Test Point	Adjustment Point	Mode	Test Tape	Connection Figure
TP52 TP53	VR55 (Noise Cancel) (Y/C PROCESS C.B.A.))	PLAY	F8-A	Fig. EA-9-18

(1)

1.Connect the equipment as shown in Fig. EA-9-18.
2.Set the input trigger mode to CH2 and set trigger slope to (+).
3.Invert CH2 signal (TP53) and select ADD mode.
4.Playback the tape and adjust VR55 so that the level becomes minimum.

(2)

1.Connect the equipment as shown in Fig. EA-9-18.
2.Set the input trigger mode to CH2 and set trigger slope to (+).
3.Playback the tape and adjust VR55 so that the output levels (A,B) of both channels become the same.

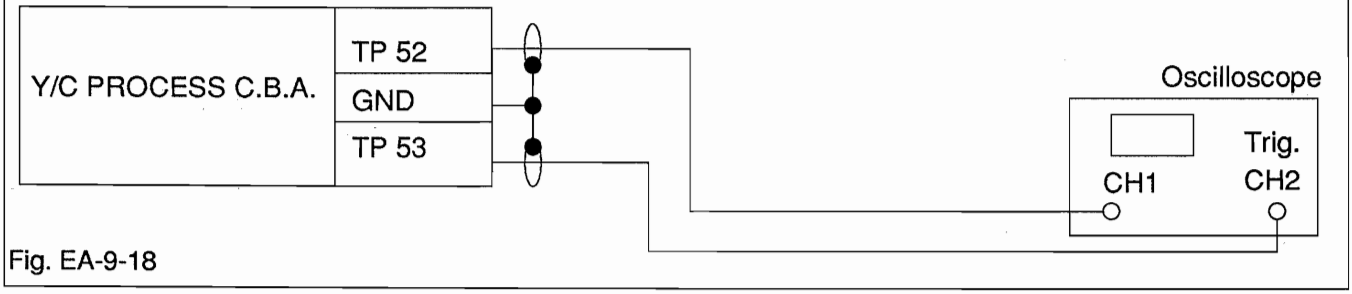


Fig. EA-9-18

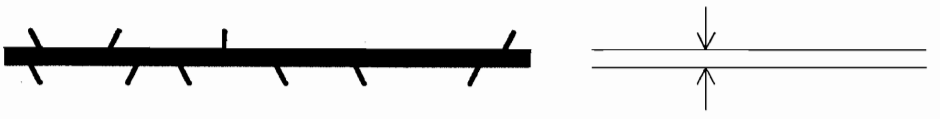
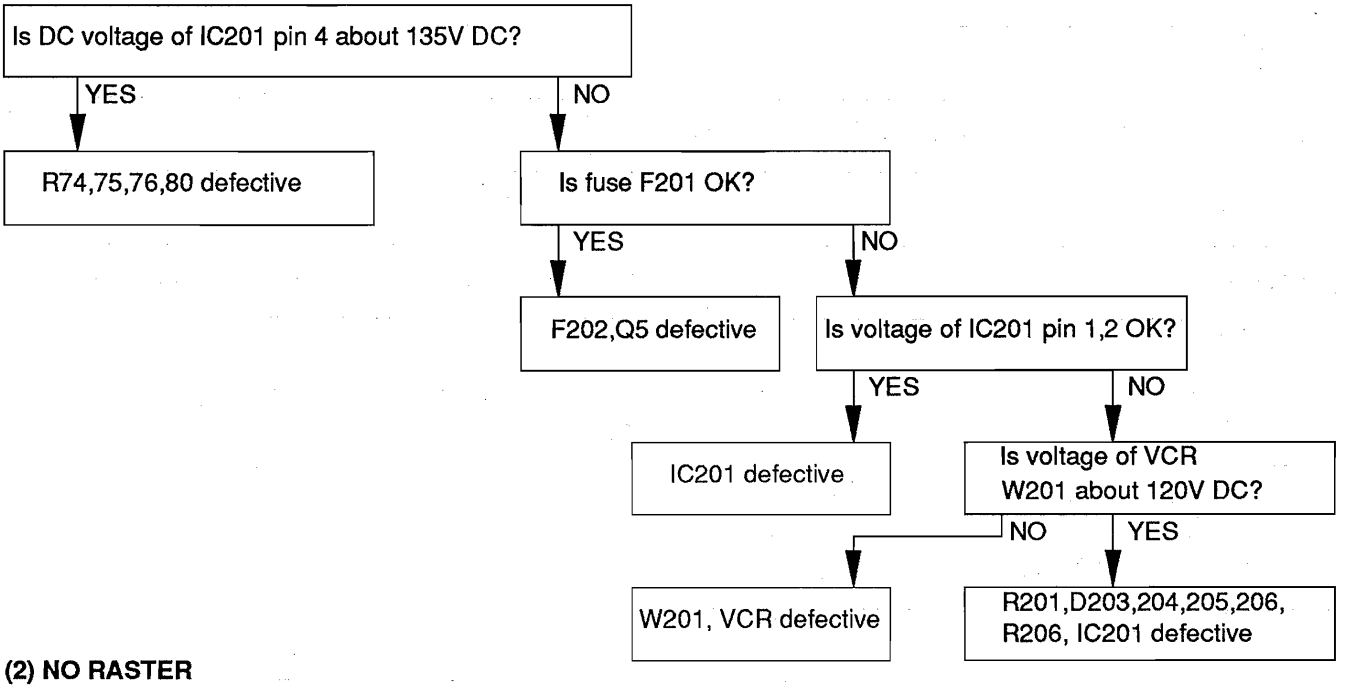


Fig. EA-9-15

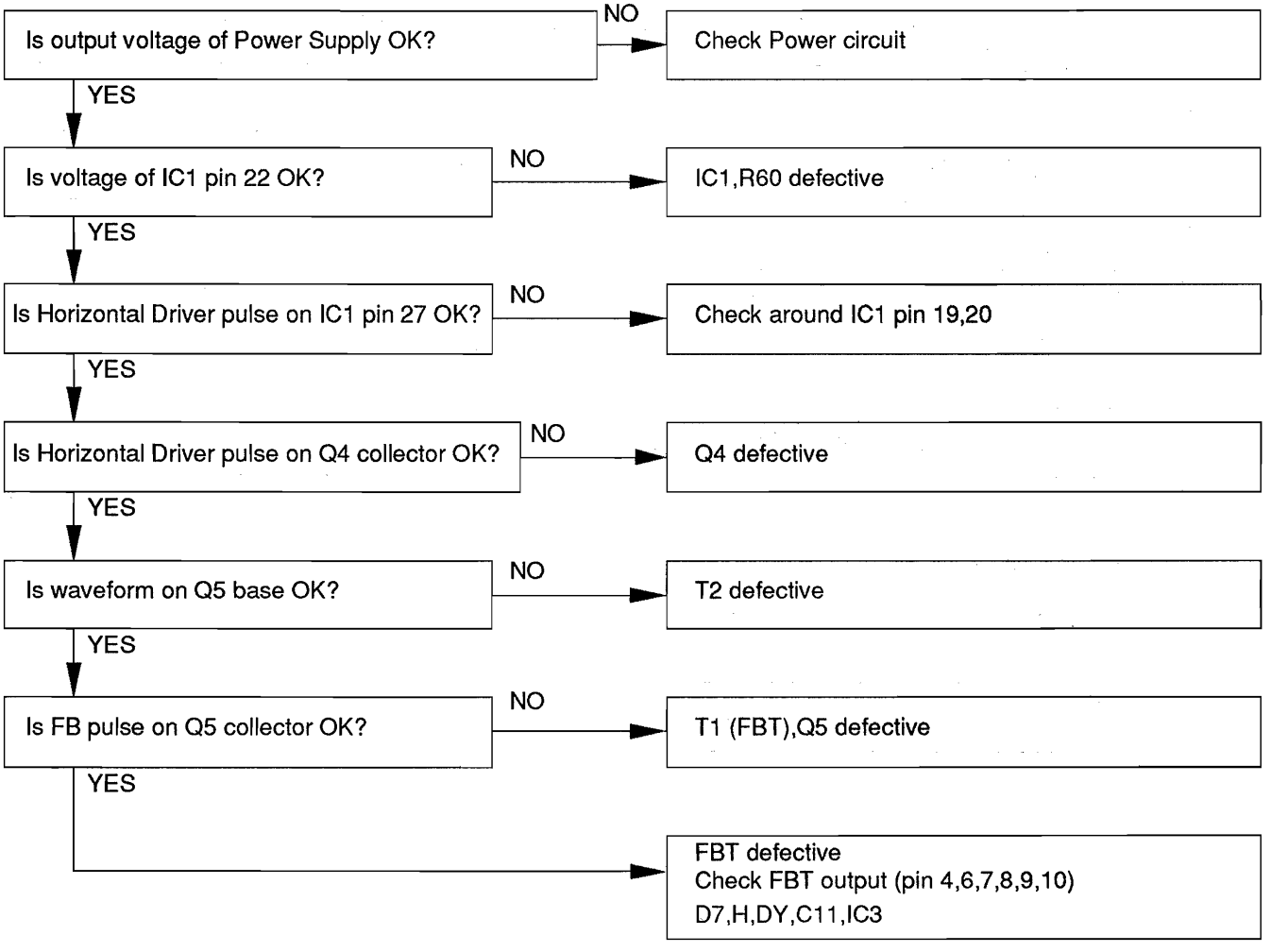
Fig. EA-9-10

TROUBLESHOOTING GUIDE

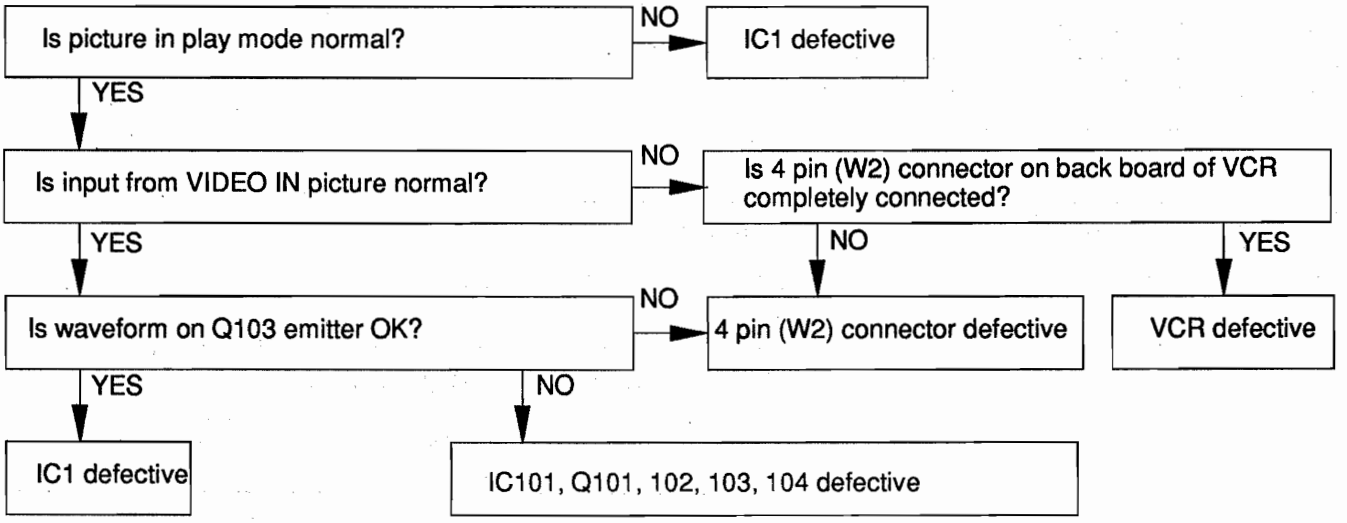
(1) NO POWER OUTPUT



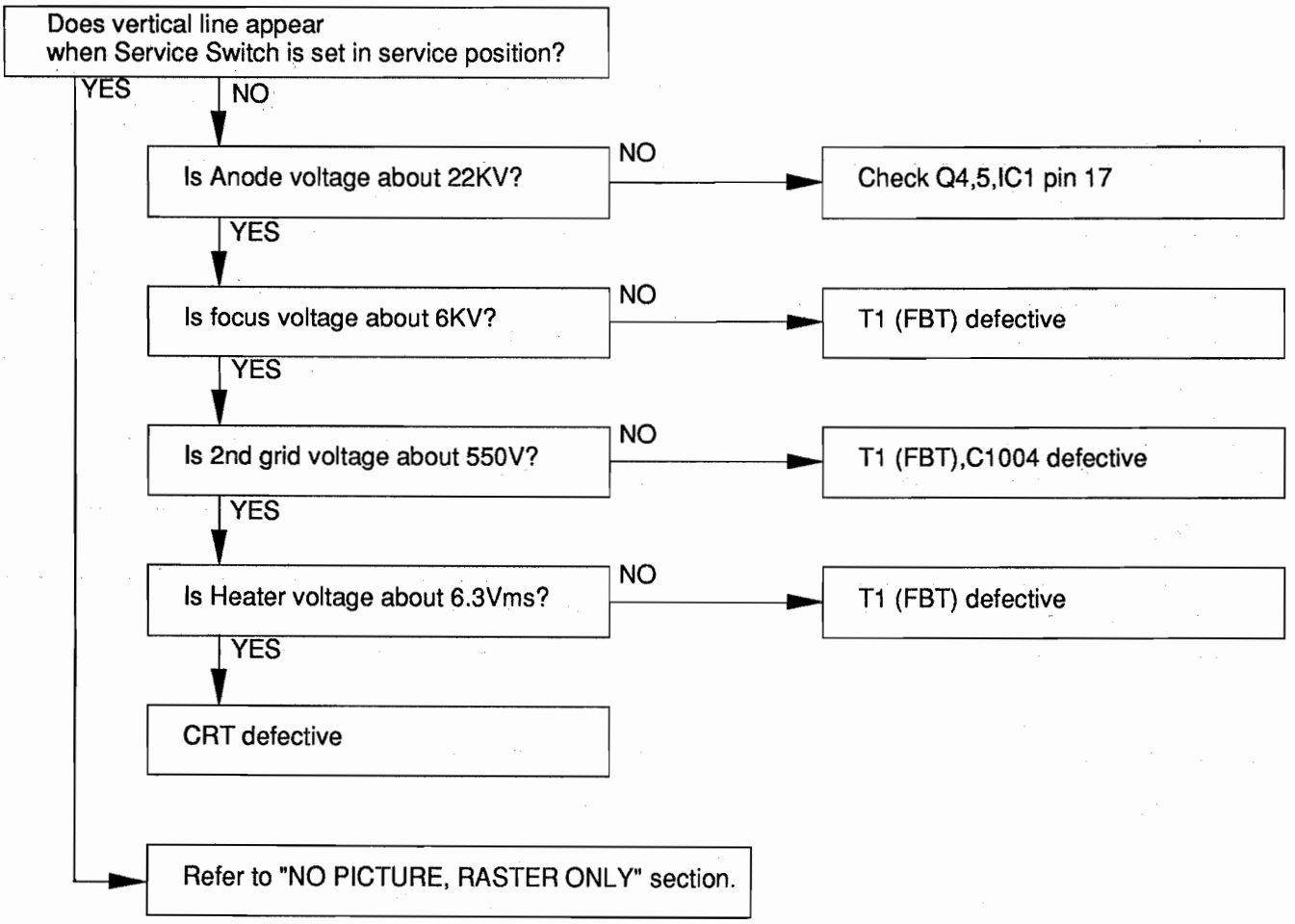
(2) NO RASTER



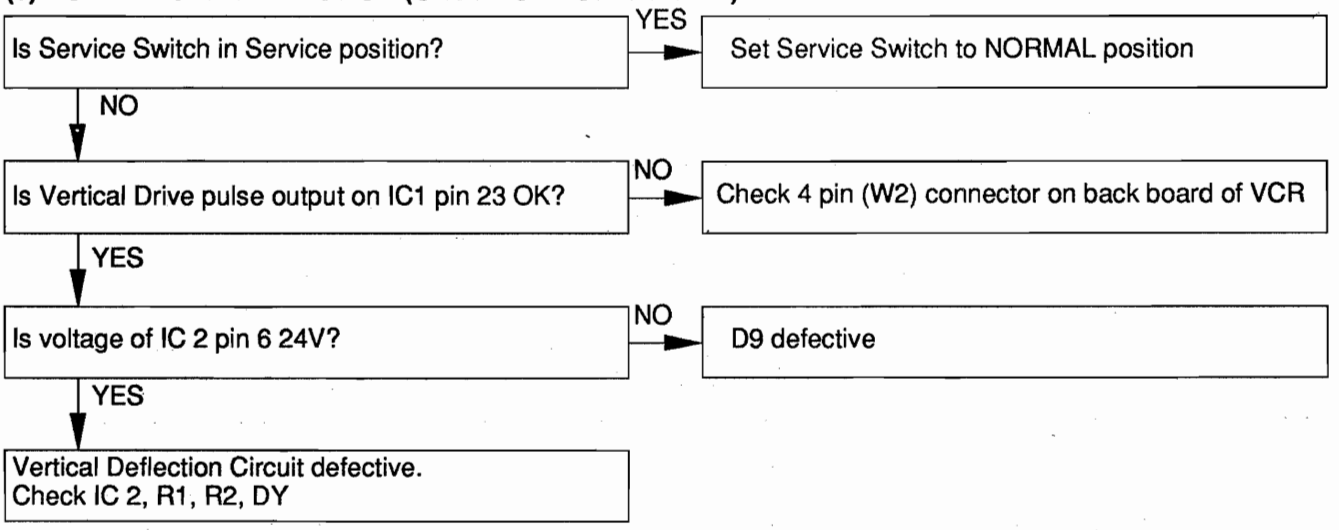
(3) NO PICTURE, RASTER ONLY



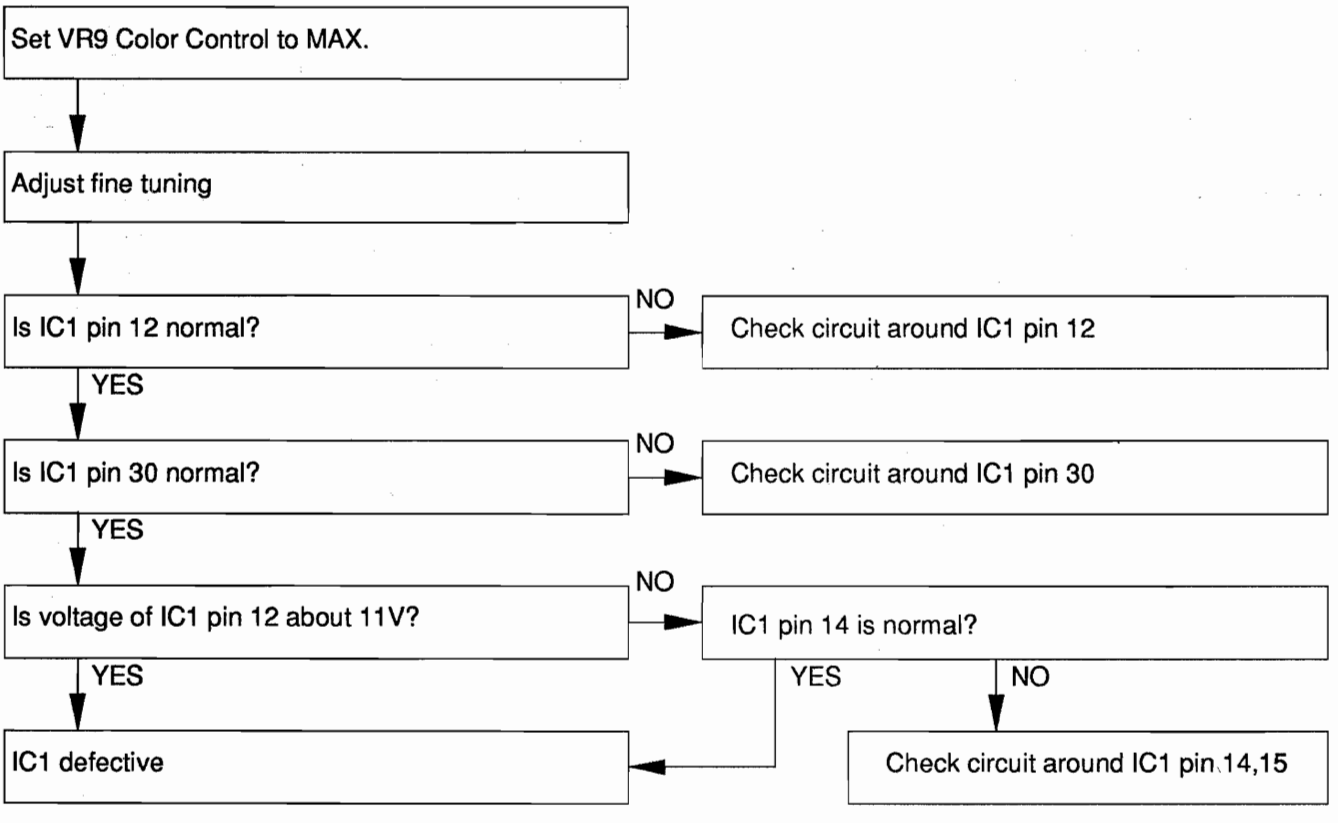
(4) NO RASTER WITH SOUND



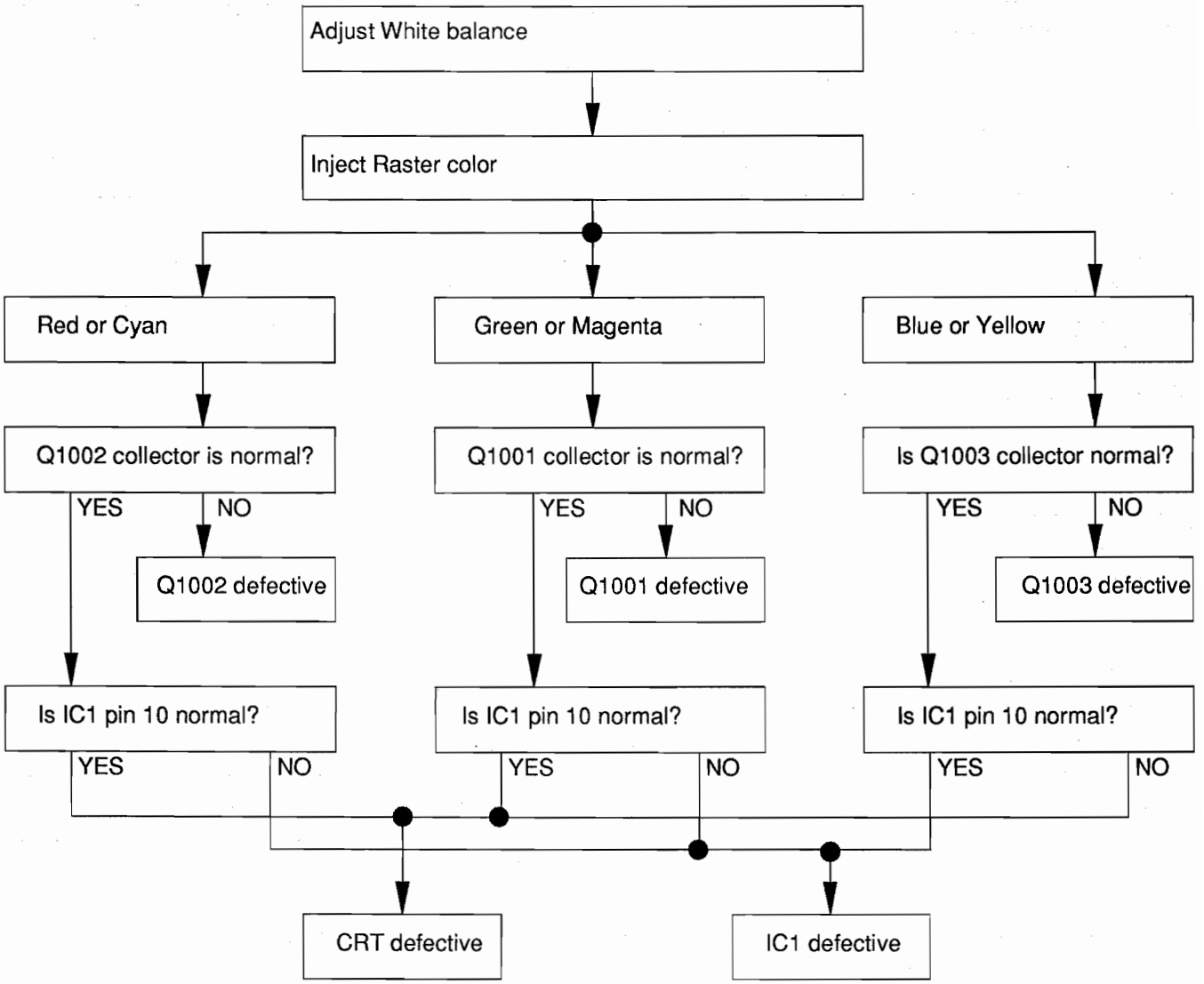
(5) NO VERTICAL DEFLECTION (ONLY HORIZONTAL LINE)


Is Service Switch in Service position?
YES
Set Service Switch to NORMAL position
NO
Is Vertical Drive pulse output on IC1 pin 23 OK?
NO
Check 4 pin (W2) connector on back board of VCR
YES
Is voltage of IC 2 pin 6 24V?
NO
D9 defective
YES
Vertical Deflection Circuit defective.
Check IC 2, R1, R2, DY

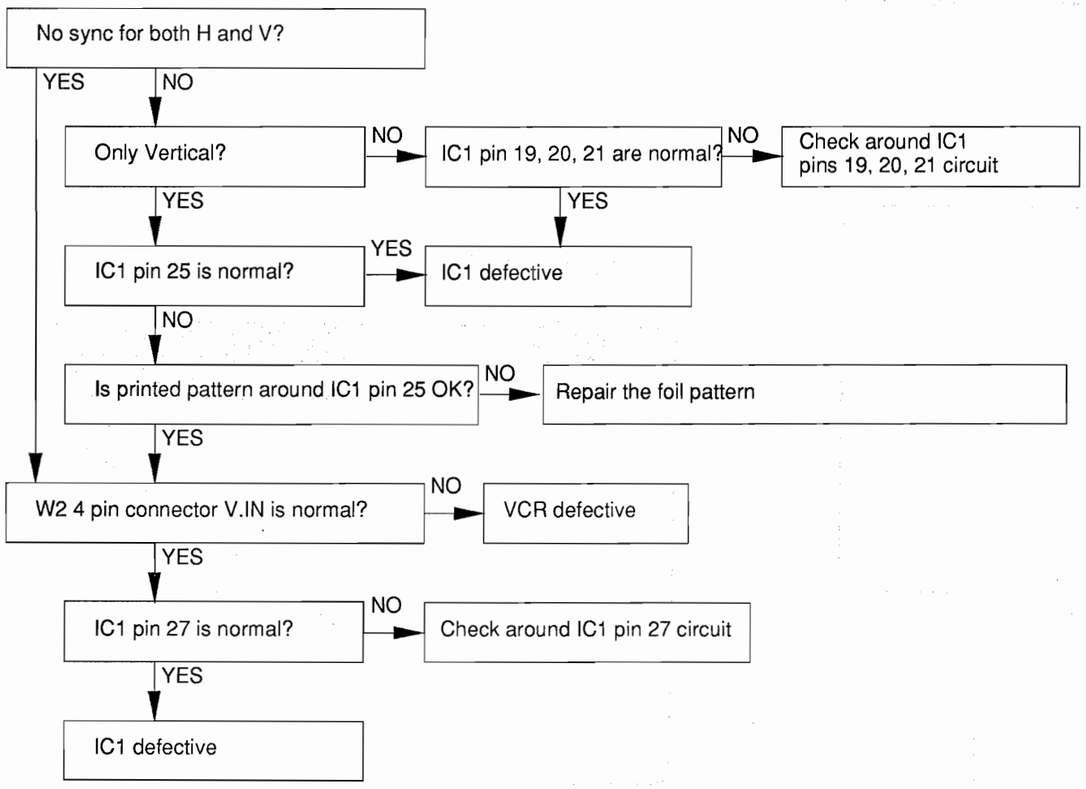
(6) NO COLOR



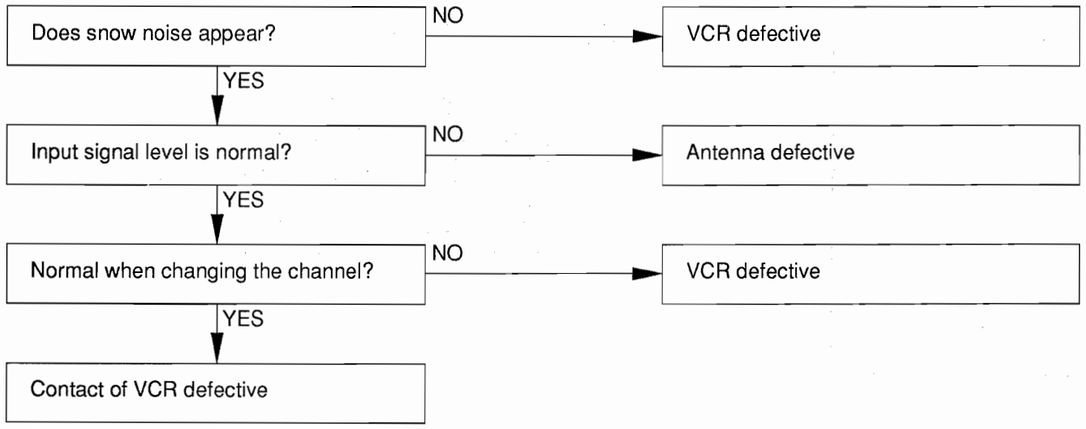
(7) DEFECTIVE COLOR



(8) PICTURE HOLD INCORRECT

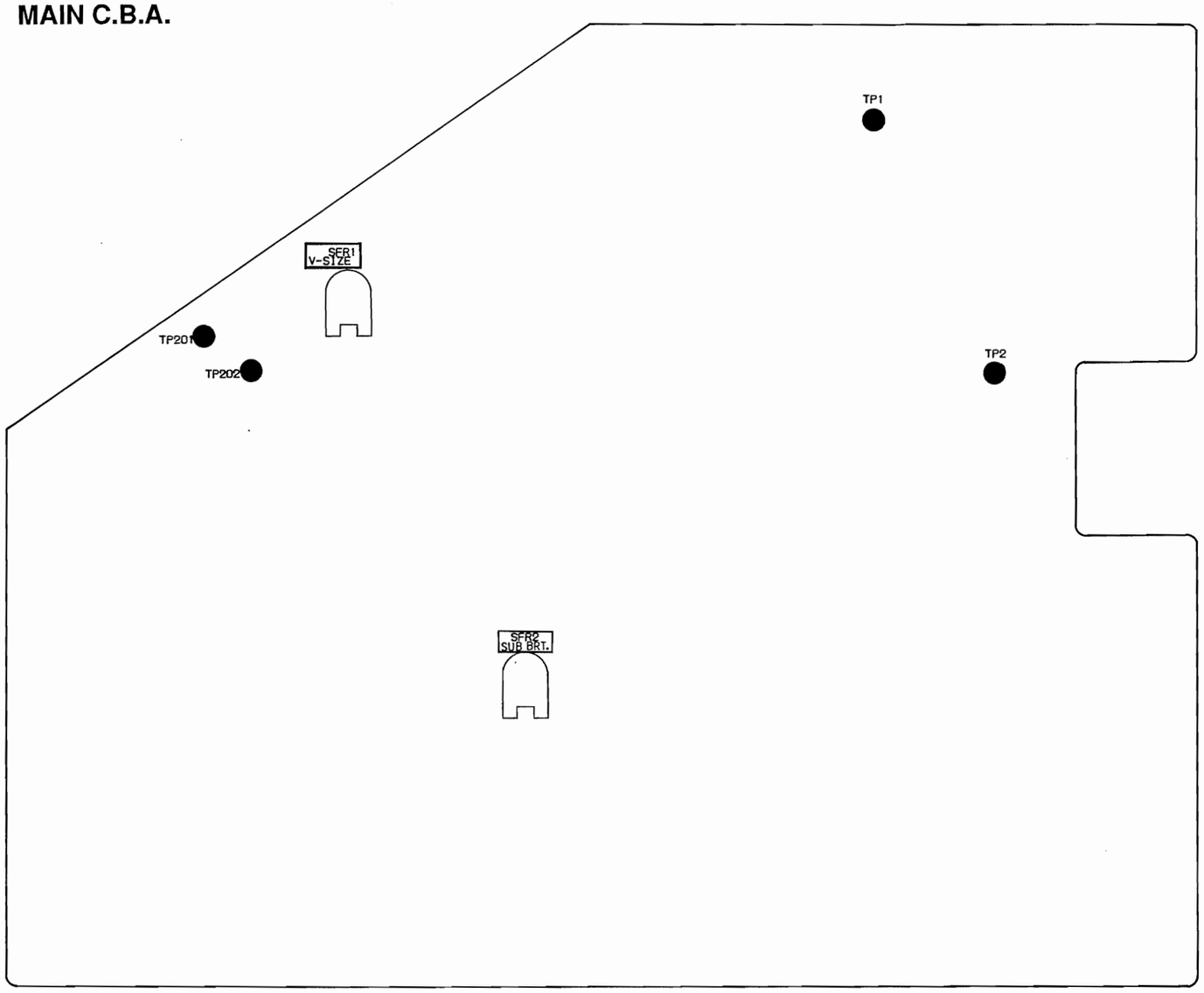


(9) DIM PICTURE

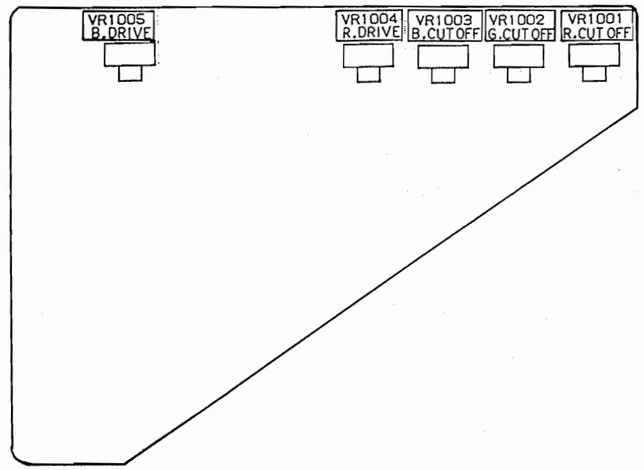


ADJUSTMENTS AND TEST POINTS [TV]

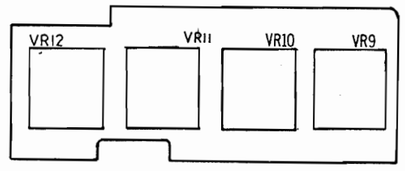
MAIN C.B.A.



CRT C.B.A.

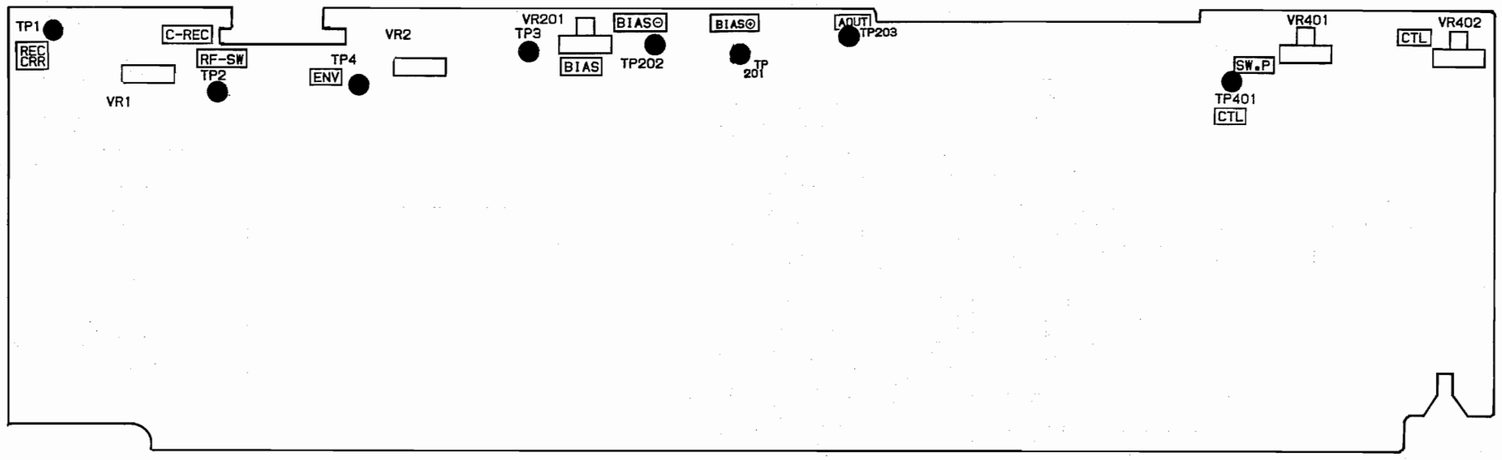


CONTROL C.B.A.

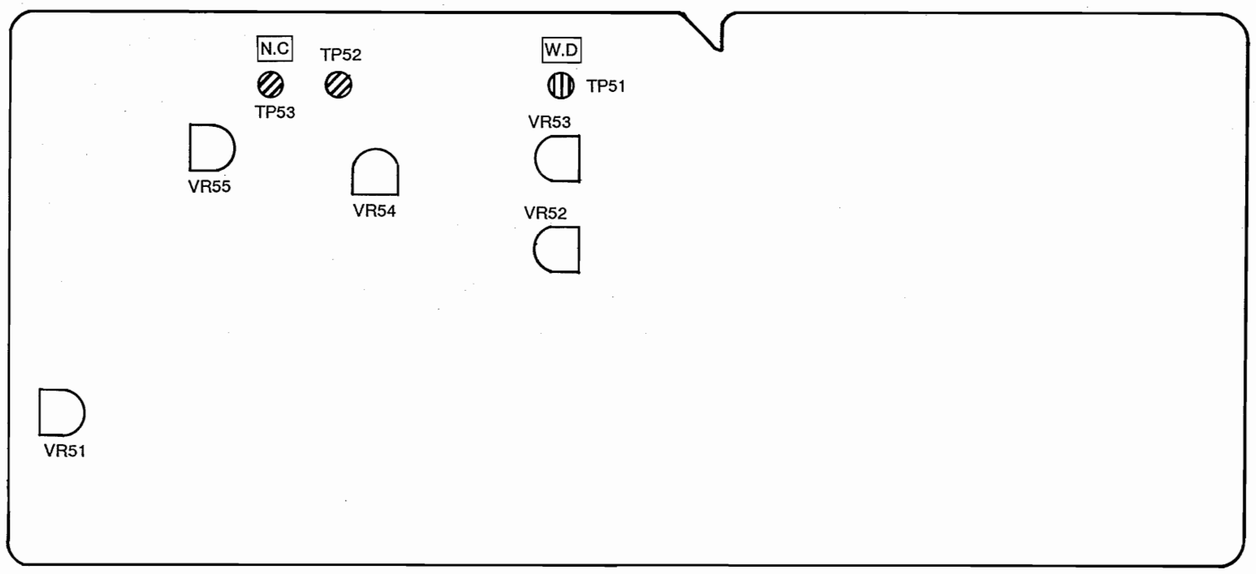


ALIGNMENT AND TEST POINTS [VCR]

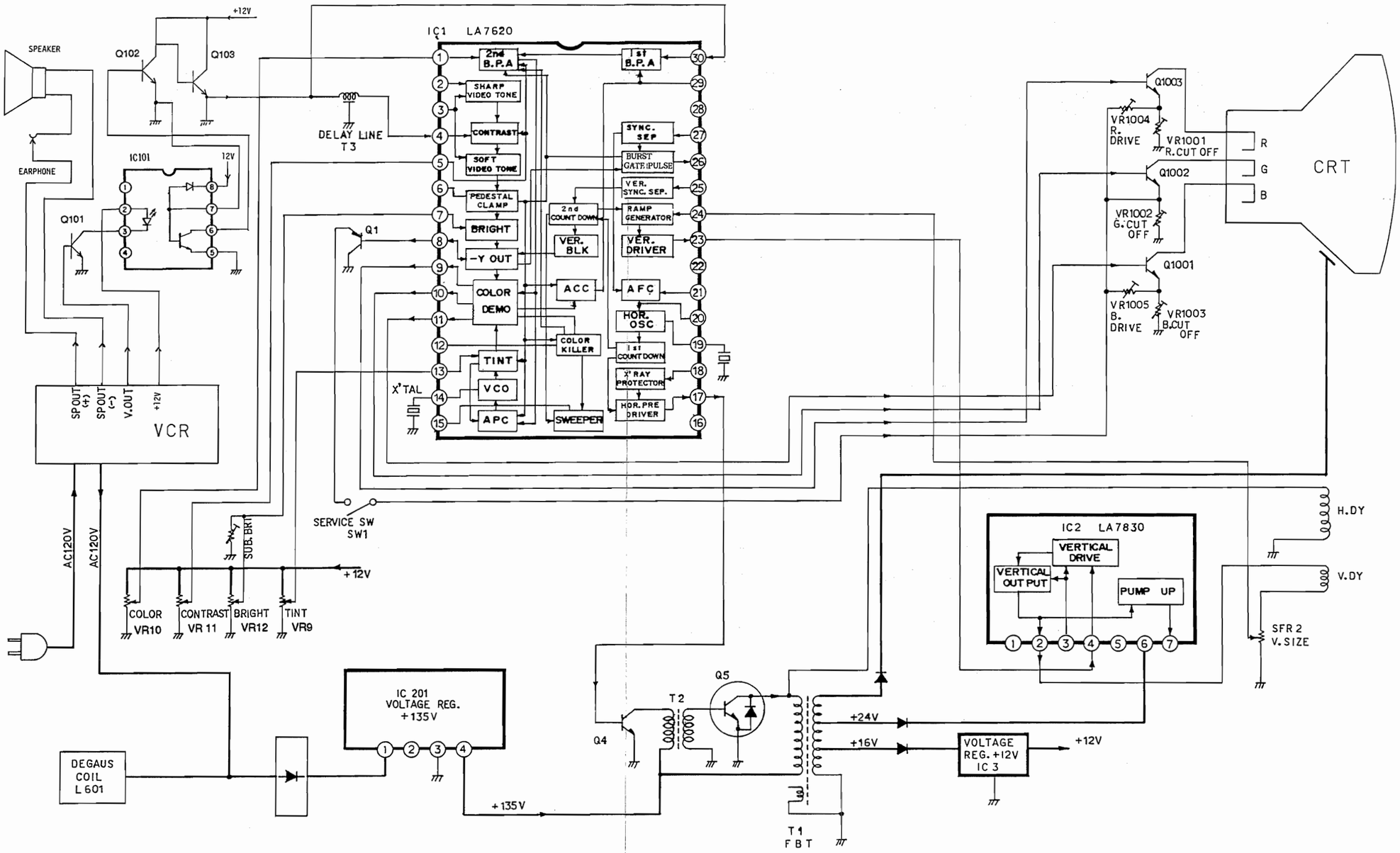
HEAD AMP / AUDIO / SERVO C.B.A.



Y/C PROCESS C.B.A.

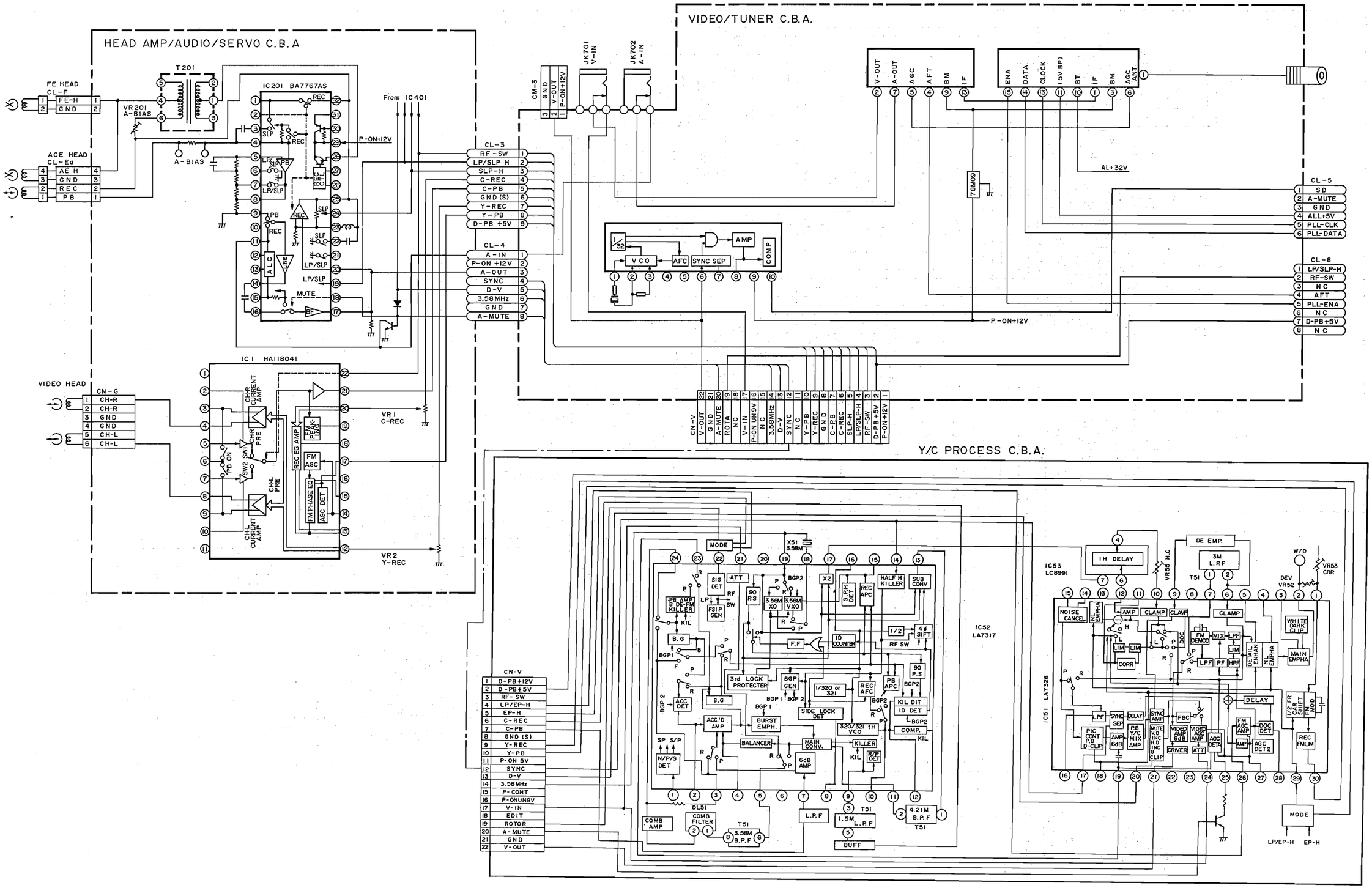


TV BLOCK DIAGRAM



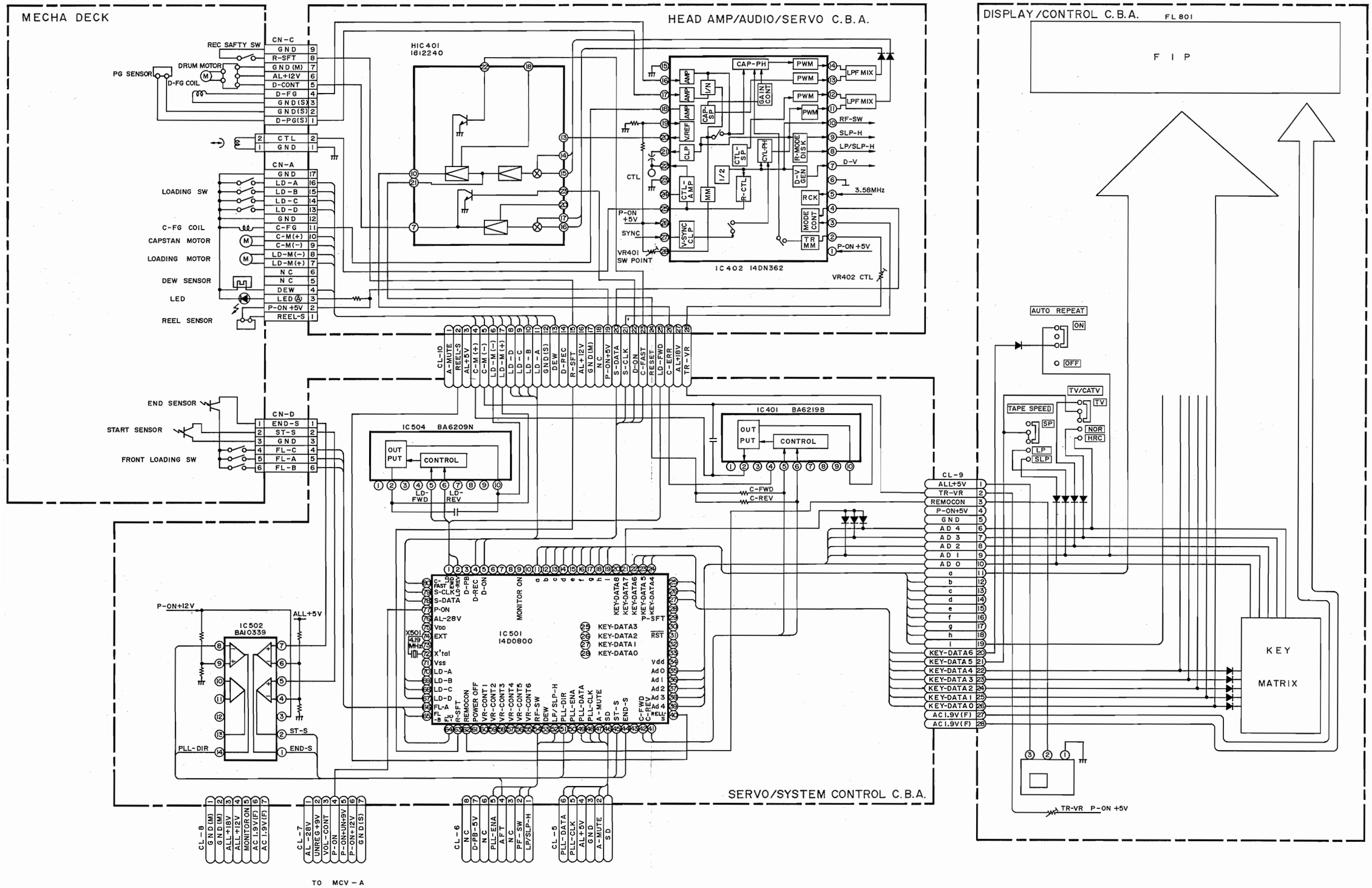
B8200BL

VIDEO/HEAD AMP/TUNER BLOCK DIAGRAM



K1800BLV

SERVO / SYSTEM CONTROL / FUNCTION BLOCK DIAGRAM



K1800BLS

SCHEMATIC DIAGRAMS AND C. B. A.

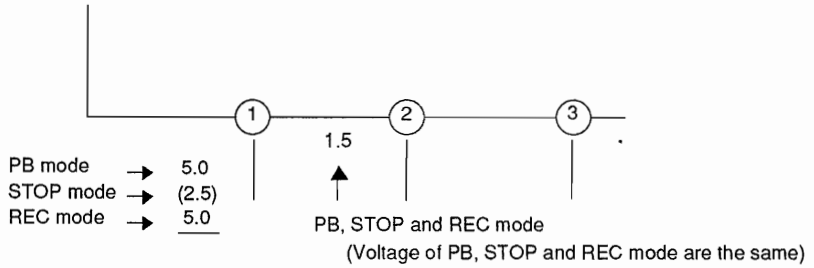
STANDARD NOTES

Warning

Many electrical and mechanical parts marked with ⚠ in this chassis have special characteristics. these characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark shown below in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may created shock, fire, or other hazards.

Notes :

① Do not use the part number shown on this drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since this drawings was prepared.
② All resistance values are indicated in ohm ($K=10^3$, $M=10^6$).
③ Resister wattages are 1/5W or 1/6W unless otherwise specified.
④ All capacitance values are indicated in μF ($P=10^{-6}\mu F$).
⑤ All voltages are DC voltages unless otherwise specified.

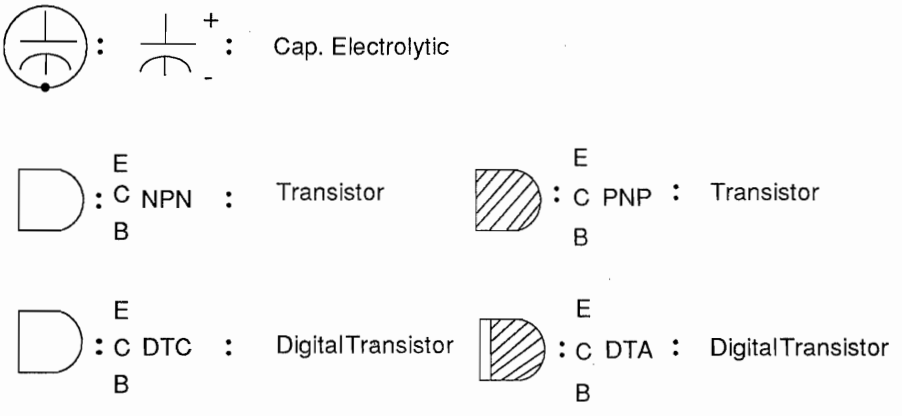


⑥ Voltage Indications for PB, STOP and REC mode on Schematic are as shown below.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature Range
(B)	±10%	20°C	-25~+85°C
(F)	+30-80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30-80%	20°C	-10~+70°C

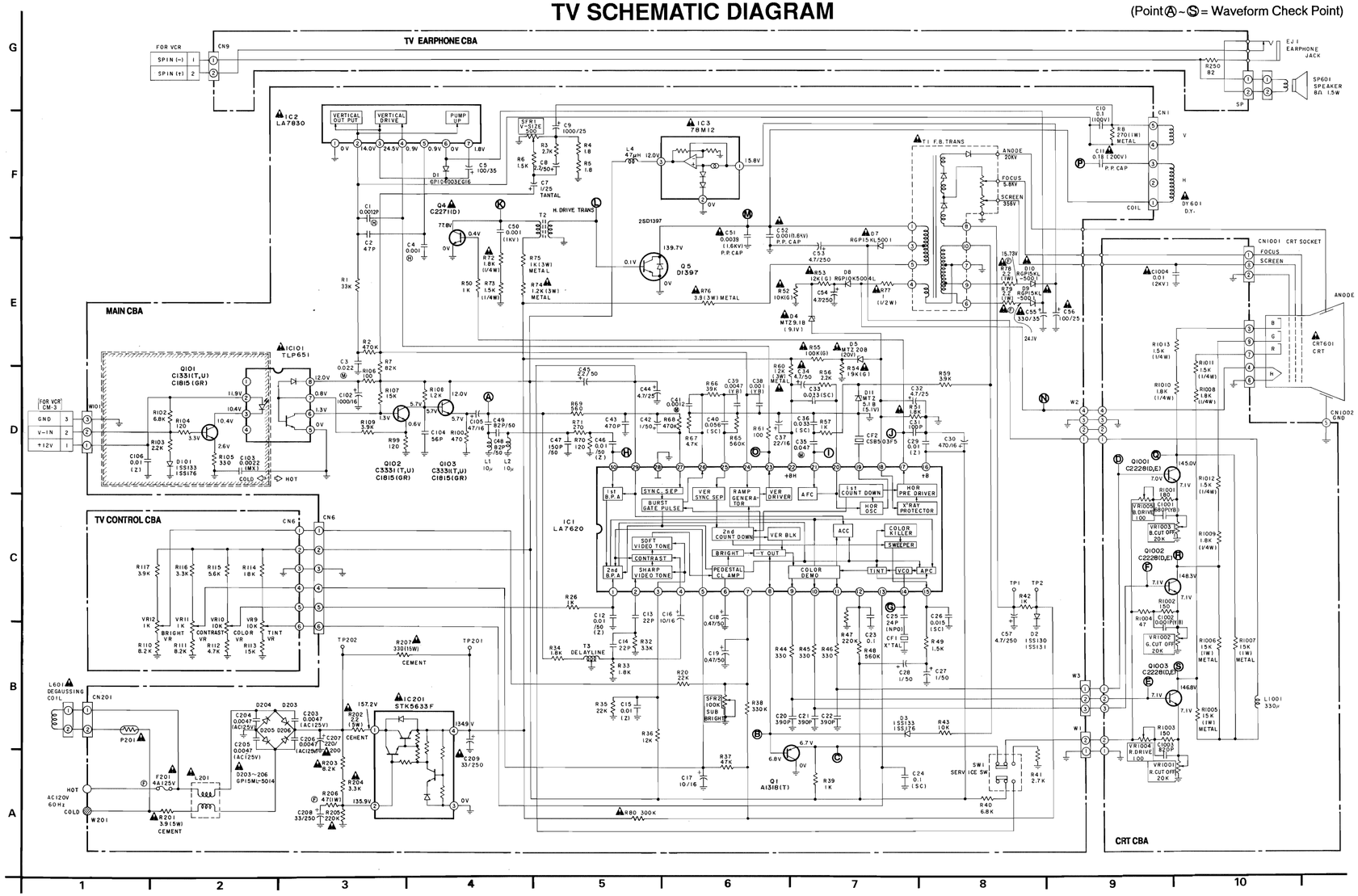
☆ Cpacitor and transistor are noted with follow symboles.



K1800SC

TV SCHEMATIC DIAGRAM

(Point Ⓐ ~ Ⓢ = Waveform Check Point)



TV EARPHONE C.B.A.

Ref. No.	Position
CONNECTOR	
CN9	G-2

MAIN C.B.A.

Ref. No.	Position
ICs	
IC1	C-5
IC2	F-3
IC3	F-6
IC101	D-3
IC201	B-4
TRANSISTORS	
Q1	A-7
Q4	E-4
Q5	E-6
Q101	D-2
Q102	D-4
Q103	D-4
CONNECTORS	
CN1	F-9
CN6	C-3
CN201	B-1
TEST POINTS	
TP1	C-8
TP2	C-8
TP201	B-4
TP202	B-3

CRT C.B.A.

Ref. No.	Position
TRANSISTORS	
Q1001	D-9
Q1002	C-9
Q1003	B-9
CONNECTORS	
CN1001	E-10
CN1002	D-11

TV CONTROL C.B.A.

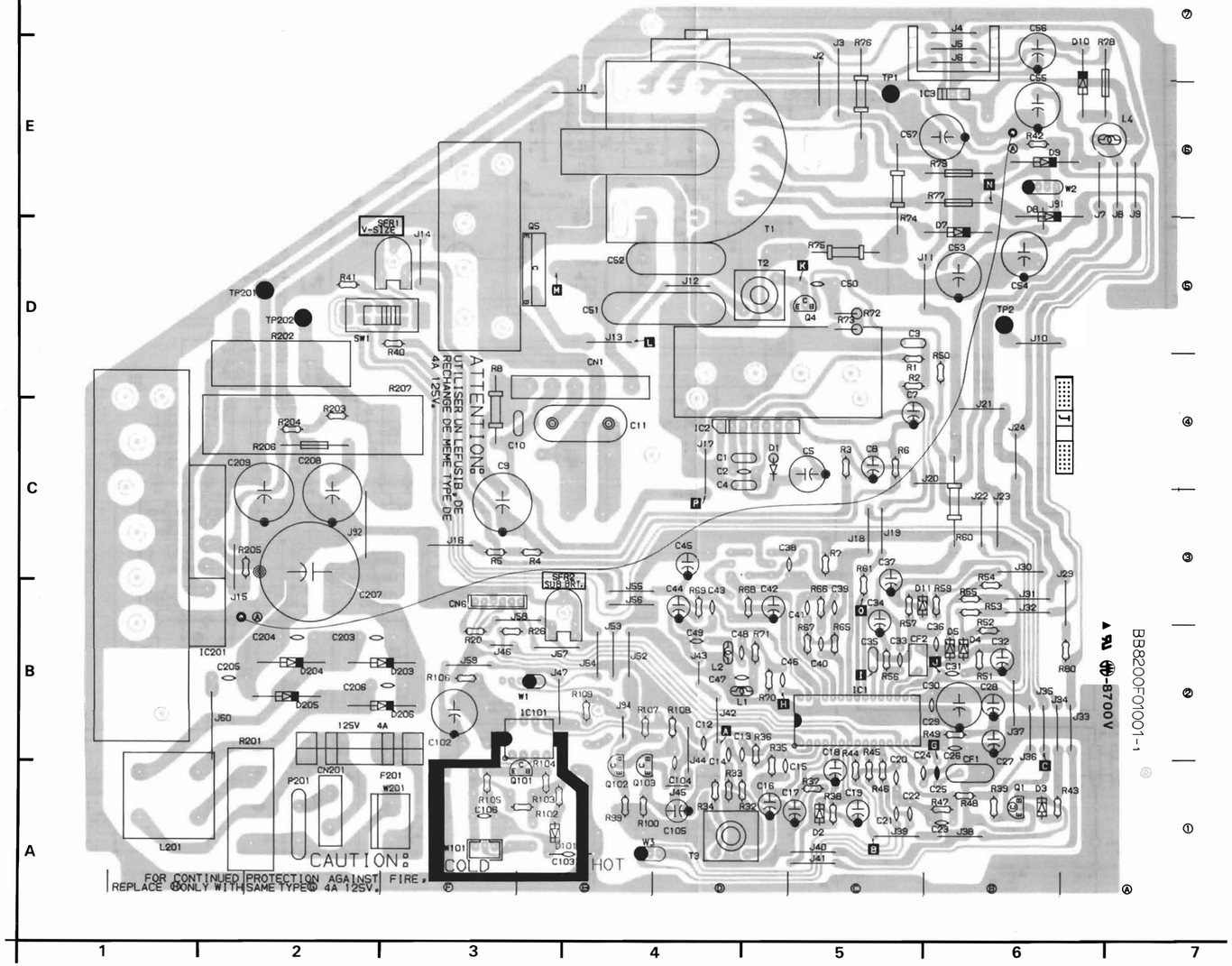
Ref. No.	Position
CONNECTOR	
CN6	C-3

B8200DRW

MAIN C.B.A.

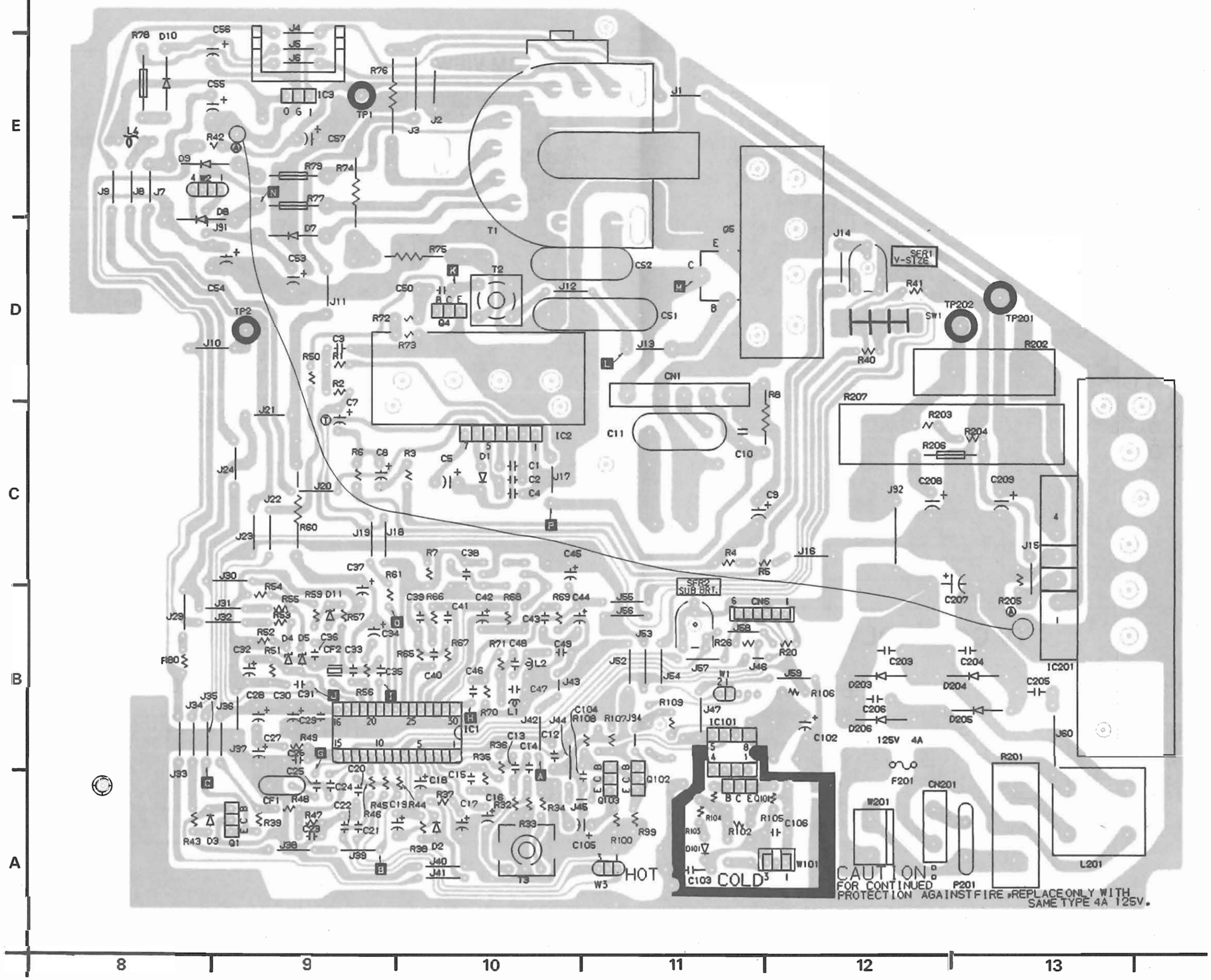
Ref. No.	Top	Bottom
ICs		
IC1	B-5	B-10
IC2	C-4	C-10
IC3	E-5	E-9
IC101	B-3	B-11
IC201	B-2	B-13
TRANSISTORS		
Q1	A-6	A-9
Q4	D-5	D-10
Q5	D-3	D-11
Q101	A-3	A-11
Q102	A-4	A-11
Q103	A-4	A-11
DIODES		
D1	C-5	C-10
D2	A-5	A-10
D3	A-6	A-9
D4	B-6	B-9
D5	B-6	B-9
D7	D-6	D-9
D8	E-6	E-9
D9	E-6	E-8
D10	E-6	E-8
D11	B-5	B-9
D101	A-3	A-11
D203	B-3	B-12
D204	B-2	B-13
D205	B-2	B-13
D206	B-3	B-12
COILS		
L1	B-4	B-10
L2	B-4	B-10
L4	E-7	E-8
L201	A-1	A-13
T1	D-5	D-10
T2	D-5	D-10
T3	A-4	A-10
TEST POINTS		
TP1	E-5	E-9
TP2	D-6	D-9
TP201	D-2	D-13
TP202	D-2	D-13
MISCELLANEOUS		
CF1	A-6	A-9
CF2	B-5	B-9
CN1	D-4	D-11
CN6	B-3	B-11
CN201	A-2	A-12
F201	A-3	A-12
P201	A-2	A-13
SFR1	D-3	D-12
SFR2	B-3	C-11
W1	B-3	B-11
W2	E-6	E-8
W3	A-4	A-11
W101	A-3	A-12
W201	A-3	A-12
SWITCH		
SW1	D-2	D-12
CAPACITORS		
C1	C-4	C-10
C2	C-4	C-10
C3	D-5	D-9
C4	C-4	C-10
C5	C-5	C-10
C7	D-5	D-9
C8	C-5	C-9
C9	C-3	C-12
C10	C-3	C-11
C11	C-4	C-11
C12	B-4	B-10
C13	B-4	B-10
C14	A-4	B-10
C15	A-5	A-10
C16	A-5	A-10
C17	A-5	A-10
C18	B-5	A-10
C19	A-5	A-10
C20	B-5	B-9
C21	A-5	A-9
C22	A-5	A-9
C23	A-6	A-9
C24	B-5	A-9
C25	A-6	A-9
C26	B-6	B-9
C27	A-6	B-9
C28	B-6	B-9
C29	B-6	B-9
C30	B-6	B-9
C31	B-6	B-9
C32	B-6	B-9
C33	B-5	B-9
C34	B-5	B-9
C35	B-5	B-9
C36	B-6	B-9
C37	C-5	C-9
C38	C-5	C-10
C39	B-5	B-10
C40	B-5	B-10
C41	B-5	B-10
C42	B-5	B-10
C43	B-4	B-10
C44	B-4	B-10
C45	C-4	C-10
C46	B-5	B-10
C47	B-4	B-10
C48	B-4	B-10
C49	B-4	B-10
C50	D-5	D-10
C51	D-4	D-11
C52	D-4	D-11
C53	D-6	D-9
C54	D-6	D-9
C55	E-6	E-9
C56	E-6	E-9
C57	E-5	E-9
C102	B-3	B-12
C103	A-4	A-11
C104	A-4	B-11
C105	A-4	A-11
C106	A-3	A-12
C203	B-2	B-12
C204	B-2	B-13
C205	B-2	B-13
C206	B-2	B-12
C207	B-2	B-13
C208	C-2	C-12
C209	C-2	C-13
RESISTORS		
R1	D-5	D-9
R2	D-5	D-9
R3	C-5	C-10
R4	C-3	C-11
R5	C-3	C-11
R6	C-5	C-9
R7	C-5	C-10
R8	D-3	D-12
R9	C-3	C-11
R20	B-3	B-12
R26	B-3	B-11
R32	A-5	A-10
R33	A-4	A-10
R34	A-4	A-10
R35	B-5	B-10
R36	B-5	B-10
R37	A-5	A-10
R38	A-5	A-10
R39	A-6	A-9
R40	D-3	D-12
R41	D-2	D-12
R42	E-6	E-8
R43	A-6	A-8
R44	B-5	A-10
R45	B-5	A-9
R46	A-5	A-9
R47	A-6	A-9
R48	A-6	A-9
R49	B-6	B-9
R50	D-6	D-9
R51	B-6	B-9
R52	B-6	B-9
R53	B-6	B-9
R54	B-6	B-9
R55	B-6	B-9
R56	B-5	B-9
R57	B-5	B-9
R59	B-6	B-9
R60	C-6	C-9
R61	C-5	C-9
R65	B-5	B-10
R66	B-5	B-10
R67	B-5	B-10
R68	B-5	B-10
R69	B-4	B-10
R70	B-5	B-10
R71	B-5	B-10
R72	D-5	D-9
R73	D-5	D-10
R74	D-5	E-9
R75	D-5	D-10
R76	E-5	E-9
R77	E-6	E-9
R78	E-6	E-8
R79	E-6	E-9
R80	B-6	B-8
R99	A-4	A-11
R101	A-3	A-11
R102	A-3	A-11
R103	A-3	A-11
R104	A-3	A-11
R105	A-3	A-12
R106	B-3	B-12
R107	B-4	B-11
R108	B-4	B-11
R109	B-4	B-11
R201	B-2	B-13
R202	D-2	D-13
R203	C-2	C-12
R204	C-2	C-13
R205	C-2	B-13
R206	C-2	C-12
R207	D-3	D-12

TV MAIN C.B.A. TOP VIEW



B8200DRW

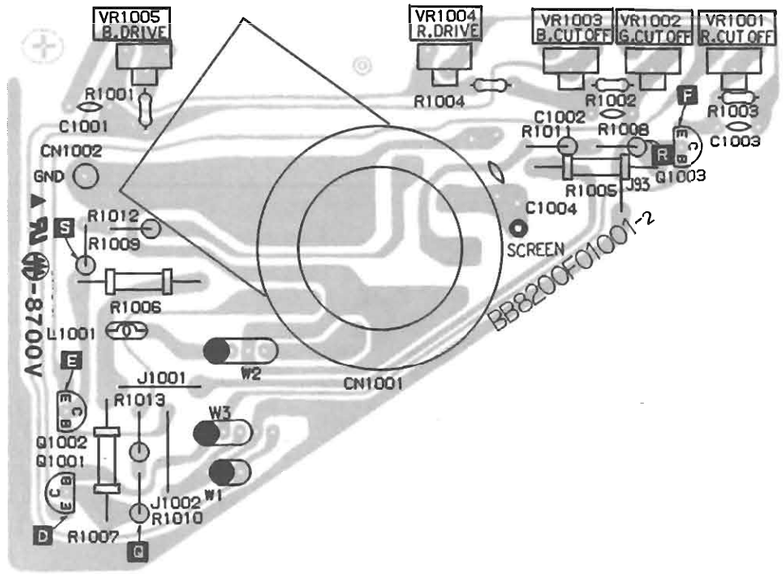
TV MAIN C.B.A. BOTTOM VIEW



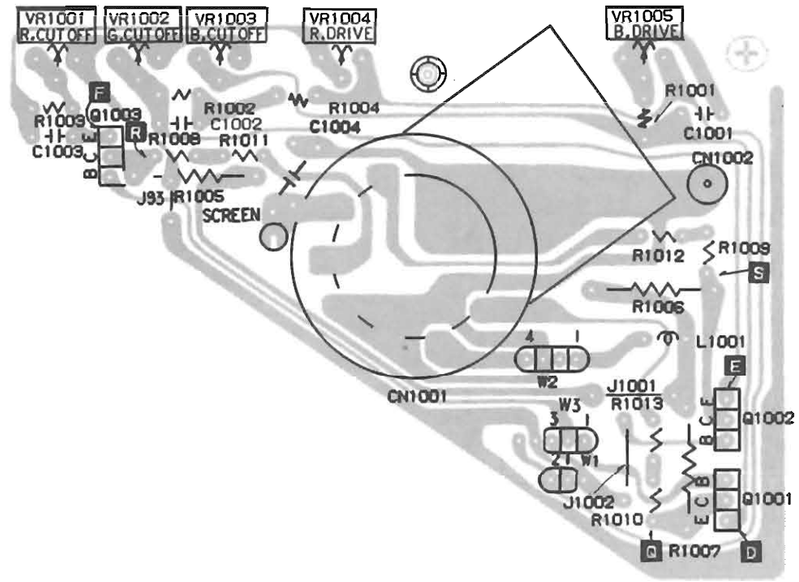
B8200DRW

CRT C.B.A.

TOP VIEW

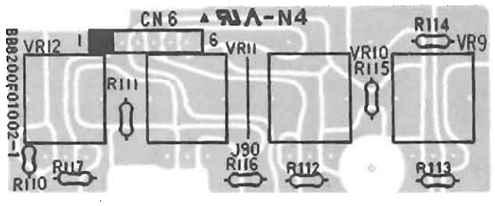


BOTTOM VIEW

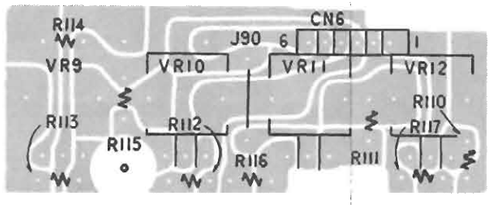


TV CONTROL C.B.A.

TOP VIEW

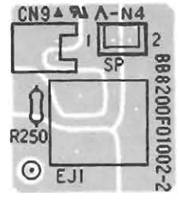


BOTTOM VIEW

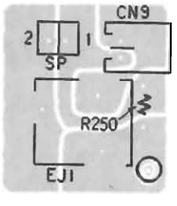


TV EARPHONE C.B.A.

TOP VIEW



BOTTOM VIEW



CRT C.B.A.

Ref. No.	Top	Bottom
TRANSISTORS		
Q1001	C-1	C-6
Q1002	C-1	C-6
Q1003	D-3	D-4
POTENTIOMETERS		
VR1001	D-3	D-4
VR1002	D-3	D-4
VR1003	D-3	D-5
VR1004	D-2	D-5
VR1005	D-2	D-6
COILS		
L1001	C-1	C-6
MISCELLANEOUS		
CN1001	C-2	C-5
CN1002	D-1	D-6
W1	C-2	C-6
W2	C-2	C-6
W3	C-2	C-6
CAPACITORS		
C1001	D-1	D-6
C1002	D-3	D-5
C1003	D-3	D-4
C1004	D-3	D-5
RESISTORS		
R1001	D-1	D-6
R1002	D-3	D-5
R1003	D-3	D-4
R1004	D-2	R-5
R1005	D-3	D-5
R1006	D-2	D-6
R1007	C-1	C-6
R1008	D-3	D-5
R1009	D-1	D-6
R1010	C-2	C-6
R1011	D-3	D-5
R1012	D-1	D-6
R1013	C-2	C-6

TV CONTROL C.B.A.

Ref. No.	Top	Bottom
POTENTIOMETERS		
VR10	A-2	A-3
VR11	B-2	A-4
VR12	B-1	A-4
MISCELLANEOUS		
CN6	B-2	B-4
RESISTORS		
R110	A-1	A-4
R111	A-1	A-4
R112	A-2	A-3
R113	A-2	A-3
R114	B-2	B-3
R115	A-2	A-3
R116	A-2	A-4
R117	A-1	A-4

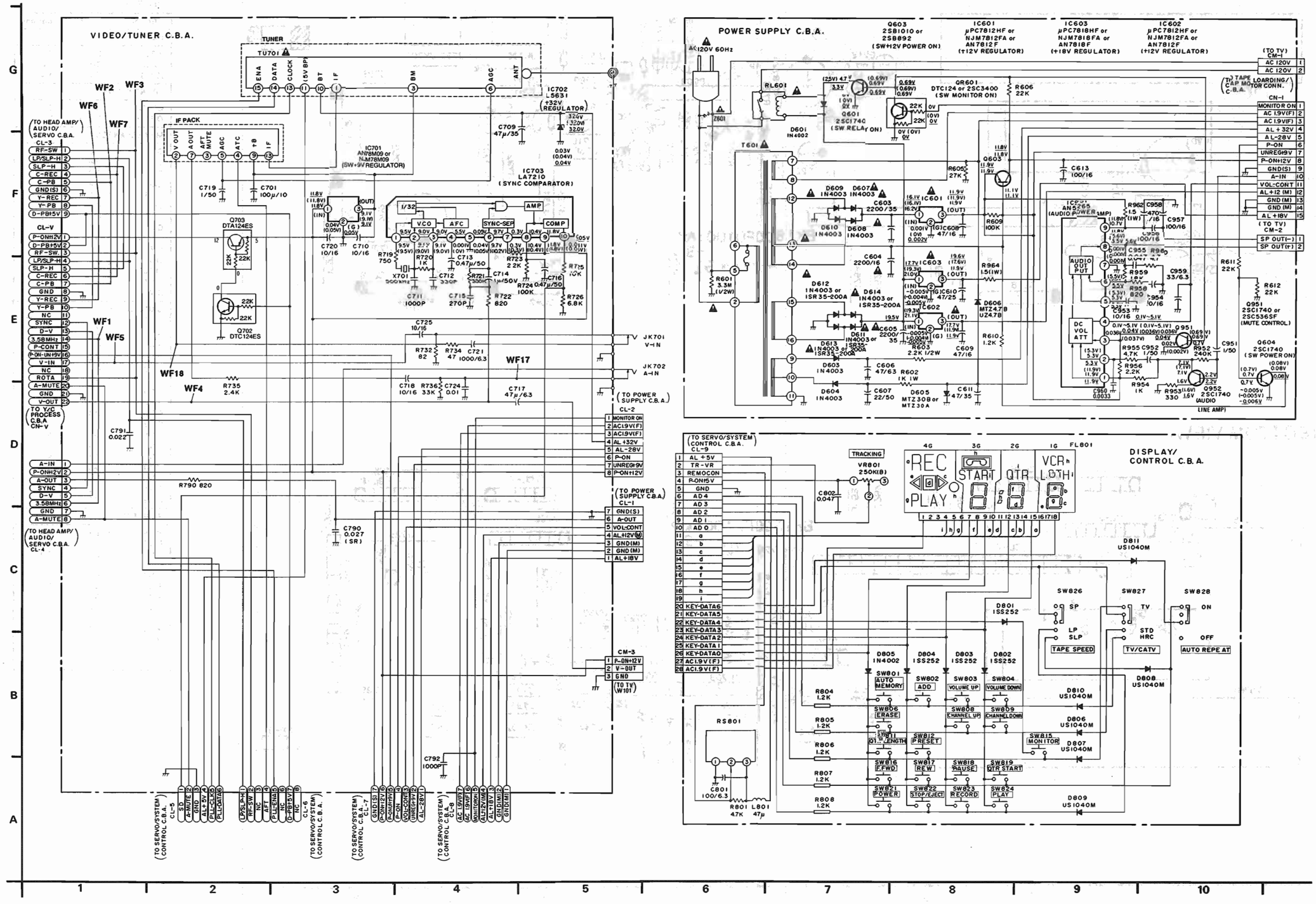
TV EARPHONE C.B.A.

Ref. No.	Top	Bottom
MISCELLANEOUS		
EJ1	A-5	A-6
CN9	B-5	B-6
SP	A-6	A-6
RESISTOR		
R250	A-5	A-6

B8200DRW

VIDEO / TUNER , POWER SUPPLY , DISPLAY / CONTROL SCHEMATIC DIAGRAMS

(WF No. = Wave Form Check Point)



VIDEO/TUNER C.B.A.

Ref. No.	Position
ICs	
IC701	F-3
IC703	F-4
CONNECTORS	
CL-1	D-5
CL-2	D-5
CL-3	F-1
CL-4	D-1
CL-5	A-2
CL-6	A-3
CL-7	A-4
CL-8	A-4
CL-V	F-1
CM-3	B-5

POWER SUPPLY C.B.A.

Ref. No.	Position
ICs	
IC601	F-8
IC602	E-8
IC603	E-8
IC951	F-9
TRANSISTORS	
Q601	G-7
Q603	F-8
Q604	E-10
Q951	E-10
Q952	E-10
QR601	G-8
QR702	E-2
QR703	F-2
CONNECTORS	
CM-1	G-10
CM-2	F-10
CN-1	G-10

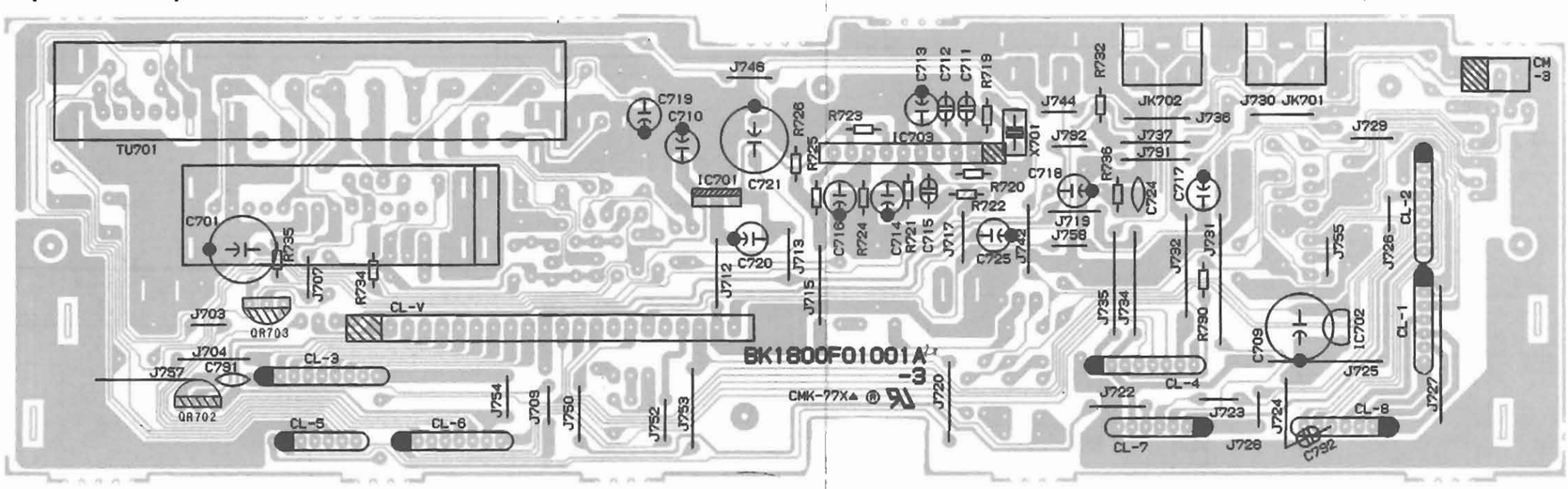
DISPLAY/CONTROL C.B.A.

Ref. No.	Position
CONNECTOR	
CL-9	D-6

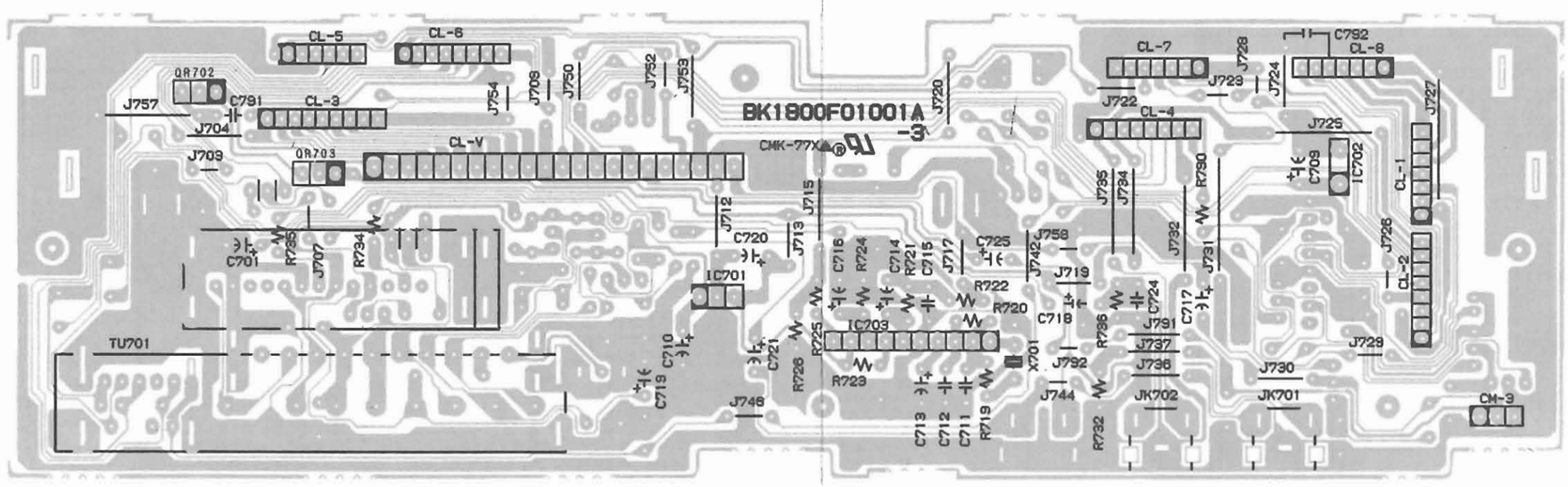
B8200DRW

VIDEO / TUNER C.B.A.

(TOP VIEW)



(BOTTOM VIEW)



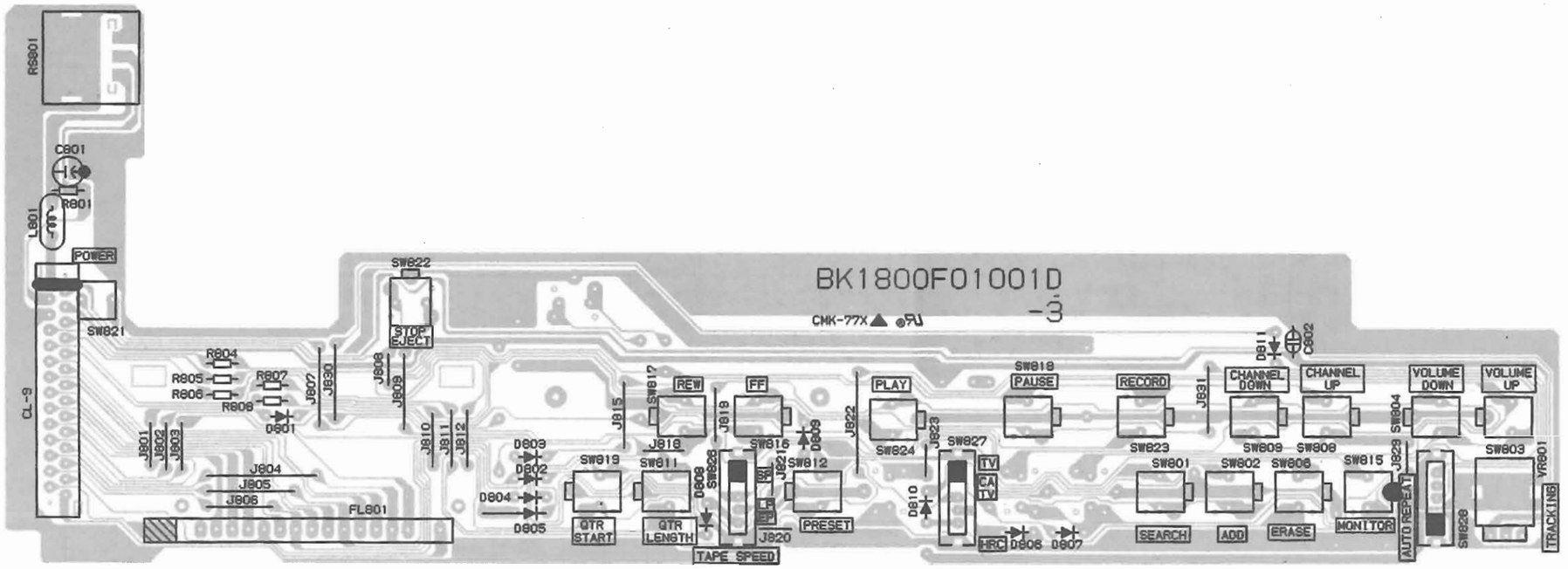
VIDEO/TUNER C.B.A.

Ref. No.	Top	Bottom
ICs		
IC701	D-3	B-3
IC702	D-6	B-6
IC703	E-4	A-4
TRANSISTORS		
QR702	D-2	B-2
QR703	D-2	B-2
MISCELLANEOUS		
CL-1	D-6	B-6
CL-2	D-6	B-6
CL-3	D-2	B-2
CL-4	D-4	B-5
CL-5	D-2	C-2
CL-6	D-2	C-2
CL-7	D-5	B-5
CL-8	D-6	B-6
CL-V	D-2	B-2
CM-3	E-6	A-6
JK701	E-6	A-6
JK702	E-5	A-5
TU701	E-1	A-1
X701	E-5	A-5
CAPACITORS		
C701	D-2	B-2
C709	D-6	B-6
C710	E-3	A-3
C711	E-4	A-4
C712	E-4	A-4
C713	E-4	A-4
C714	D-4	B-4
C715	D-4	B-4
C716	D-4	B-4
C717	D-5	B-5
C719	E-3	A-3
C720	D-4	B-4
C721	D-4	A-4
C724	D-4	B-4
C725	D-5	B-5
C791	D-2	B-2
C792	C-6	C-6
RESISTORS		
R719	E-4	A-4
R720	D-4	B-4
R721	D-4	B-4
R722	D-4	B-4
R723	E-4	A-4
R724	D-4	B-4
R725	D-4	A-4
R726	E-4	A-4
R732	E-5	A-5
R734	D-2	B-2
R735	D-2	B-2
R736	D-5	B-5
R790	D-5	B-5

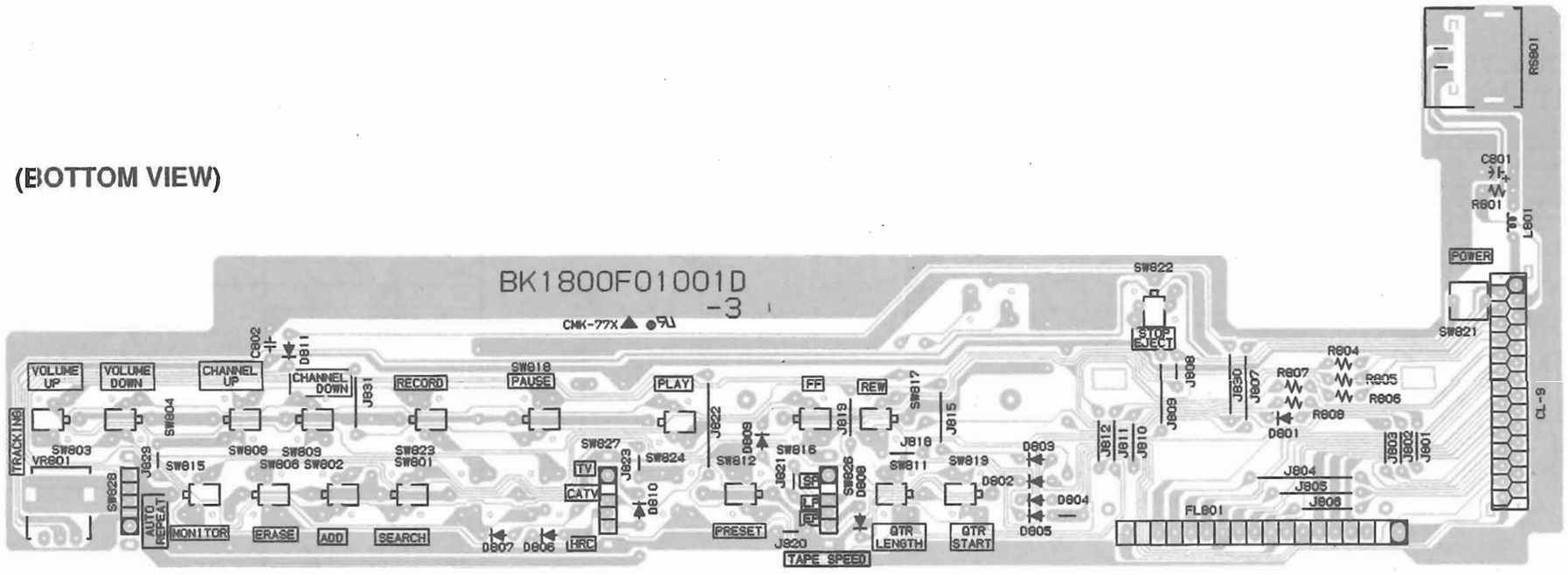
B8200DRW

DISPLAY / CONTROL C.B.A.

(TOP VIEW)



(BOTTOM VIEW)



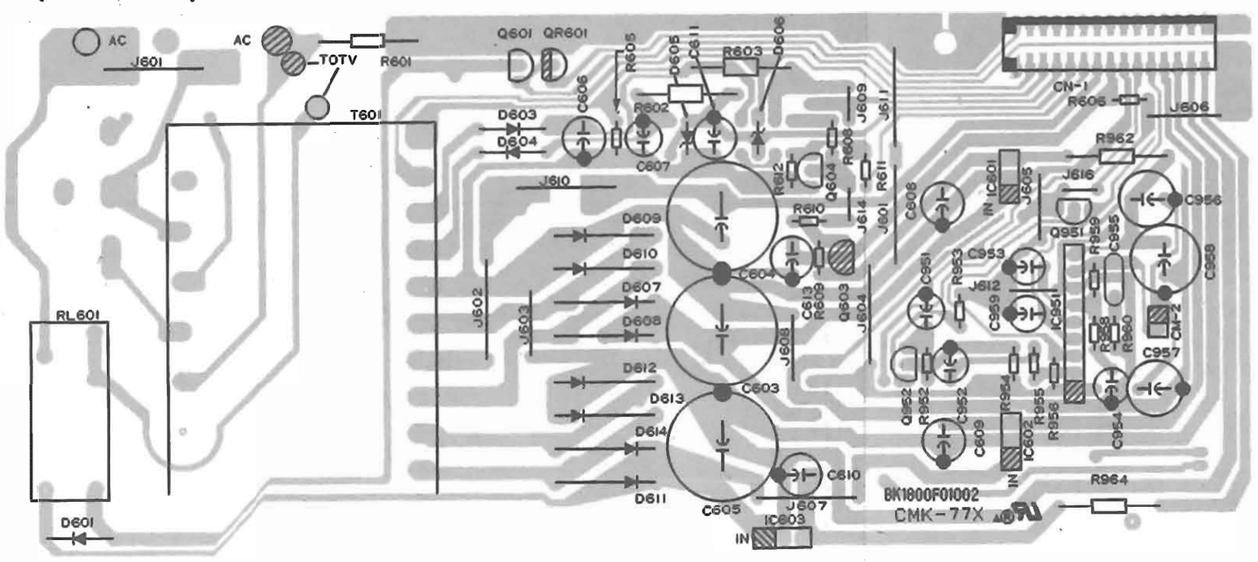
DISPLAY/CONTROL C.B.A.

Ref. No.	Top	Bottom
DIODES		
D801	D-2	A-6
D802	D-3	A-5
D803	D-3	A-5
D804	D-3	A-5
D805	C-3	A-5
D806	C-5	A-3
D807	C-5	A-3
D808	D-4	A-4
D809	D-4	A-4
D810	C-4	A-3
D811	D-6	B-2
COIL		
L801	E-1	B-7
POTENTIOMETER		
VR801	D-7	A-1
MISCELLANEOUS		
CL-9	D-1	A-7
FL801	C-2	A-6
RS801	E-1	C-7
SWITCHES		
SW801	D-5	A-3
SW802	D-6	A-2
SW803	D-7	A-1
SW804	D-6	A-2
SW806	D-6	A-2
SW808	D-6	A-2
SW809	D-6	A-2
SW811	D-3	A-4
SW812	D-4	A-4
SW815	D-6	A-2
SW816	D-4	A-4
SW817	D-3	B-5
SW818	D-5	B-3
SW819	D-3	A-5
SW821	D-1	B-7
SW822	D-3	B-5
SW823	D-5	A-3
SW824	D-4	A-4
SW826	D-4	A-4
SW827	D-5	A-3
SW828	C-7	A-1
RESISTORS		
R801	E-1	B-7
R804	D-2	B-6
R805	D-2	B-6
R806	D-2	A-6
R807	D-2	B-6
R808	D-2	A-6
CAPACITORS		
C801	E-1	B-7
C802	D-6	B-2

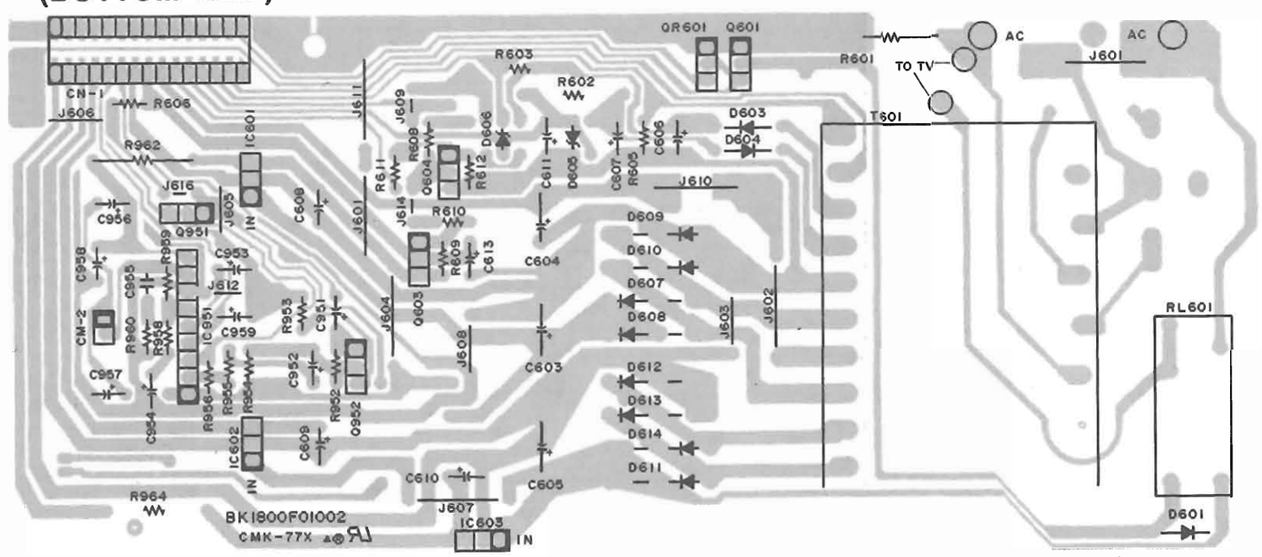
B8200DRW

POWER SUPPLY C.B.A.

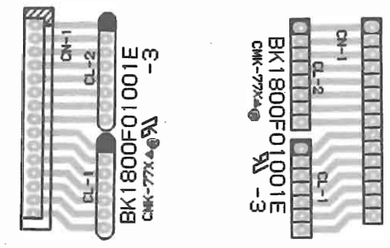
(TOP VIEW)



(BOTTOM VIEW)



TAPE LOADING / CAP. MOTOR CONN. C.B.A.



(TOP VIEW) (BOTTOM VIEW)

POWER SUPPLY C.B.A.

Ref. No.	Top	Bottom
ICs		
IC601	E-5	B-2
IC602	D-5	A-2
IC603	D-4	A-3
IC951	D-5	B-2
TRANSISTORS		
Q601	E-3	C-4
Q603	D-4	B-3
Q604	E-4	B-3
Q951	E-5	B-2
Q952	D-4	A-2
QR601	E-3	C-4
DIODES		
D601	C-1	A-5
D603	E-3	B-4
D604	E-3	B-4
D605	E-4	B-3
D606	E-4	B-3
D607	D-3	B-3
D608	D-3	B-3
D609	E-3	B-3
D610	E-3	B-3
D611	D-3	A-3
D612	D-3	B-3
D613	D-3	A-3
D614	D-3	A-3
COIL		
T601	E-2	B-4
MISCELLANEOUS		
CM-2	D-5	B-1
CN-1	E-5	C-1
RL601	D-1	B-5
CAPACITORS		
C603	D-4	B-3
C604	D-4	B-3
C605	D-4	A-3
C606	E-3	B-3
C607	E-3	B-3
C608	E-4	B-2
C609	D-5	A-2
C610	D-4	A-3
C611	E-4	B-3
C613	D-4	B-3
C951	D-4	B-2
C952	D-4	B-2
C953	E-5	B-2
C954	D-5	A-2
C955	E-5	B-2
C956	E-5	B-1
C957	D-5	A-1
C958	E-5	B-1
C959	D-5	B-2
RESISTORS		
R601	E-2	C-4
R602	E-3	C-3
R603	E-4	C-3
R605	E-3	B-3
R606	E-5	C-2
R608	E-4	B-3
R609	D-4	B-3
R610	E-4	B-3
R611	E-4	B-2
R612	E-4	B-3
R952	D-4	A-2
R953	D-5	B-2
R954	D-5	A-2
R955	D-5	A-2
R956	D-5	A-2
R958	D-5	B-2
R959	E-5	B-2
R960	D-5	B-2
R962	E-5	B-2
R964	D-5	A-2

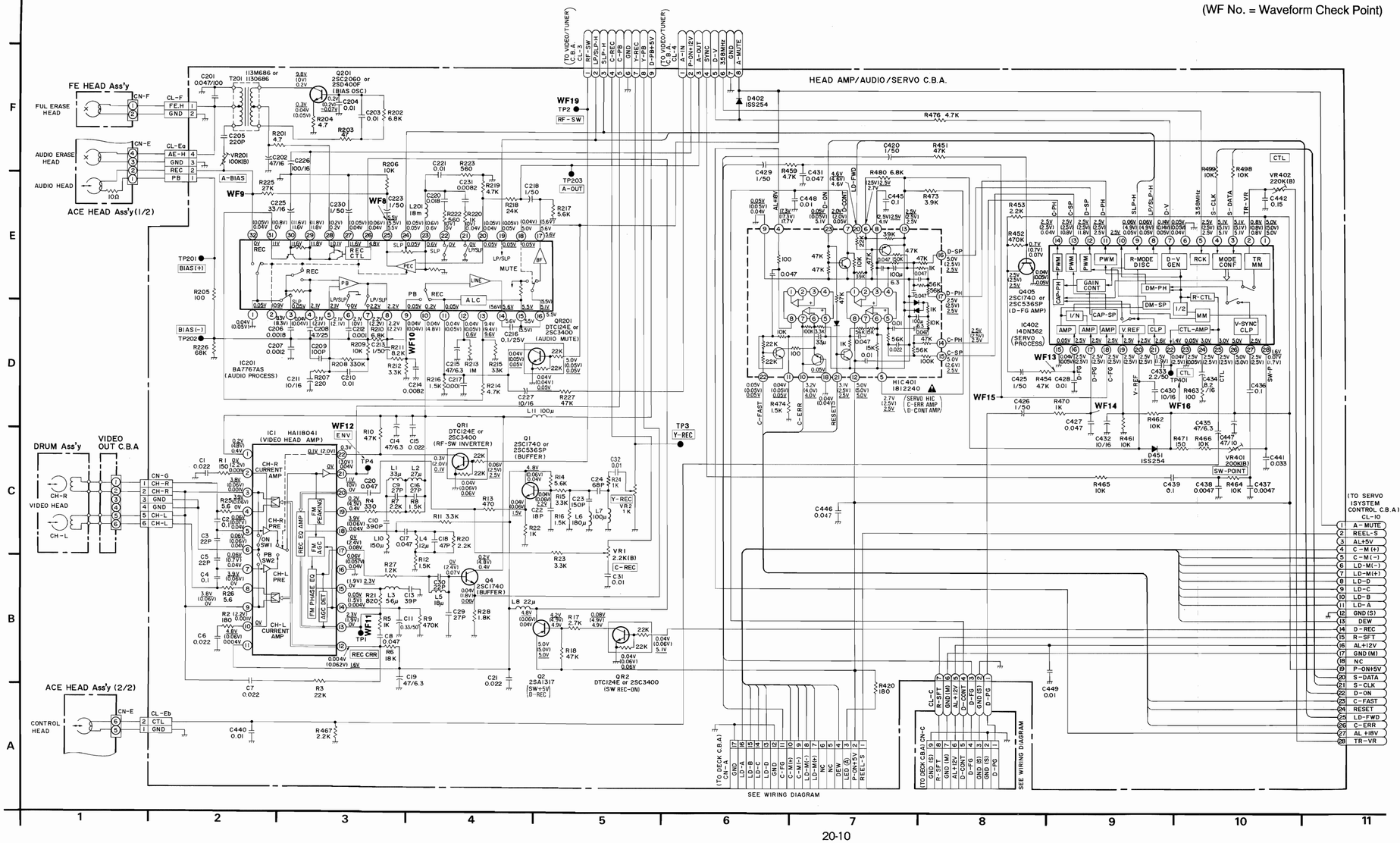
TAPE LOADING/CAP. MOTOR CONN. C.B.A.

Ref. No.	Top	Bottom
MISCELLANEOUS		
CL-1	E-6	E-7
CL-2	E-6	E-7
CN-1	E-6	E-7

B8200DRW

HEAD AMP / AUDIO / SERVO SCHEMATIC DIAGRAM

(WF No. = Waveform Check Point)


HEAD AMP/AUDIO/SERVO C.B.A.
FE HEAD Ass'y
ACE HEAD Ass'y (1/2)
ACE HEAD Ass'y (2/2)
DRUM Ass'y
VIDEO OUT C.B.A
IC201 BA7767AS (AUDIO PROCESS)
IC1 HA11804 (VIDEO HEAD AMP)
IC402 14ON362 (SERVO PROCESS)
HIC401 1812240 (SERVO HIC (C-ERR AMP (D-CONT AMP)
Q201 2SC2060 or 2SD400F (BIAS OSC)
Q405 2SC1740 or 2SC536SP (D-FG AMP)
QR1 DTC124E or 2SC3400 (RF-SW INVERTER)
Q1 2SC1740 or 2SC536SP (BUFFER)
QR201 DTC124E or 2SC3400 (AUDIO MUTE)
Q4 2SC1740 (BUFFER)
Q2 2SA1317 (SW+5V) (D-REC)
QR2 DTC124E or 2SC3400 (SW REC-ON)
D402 1SS254
D451 1SS254
(TO SERVO (SYSTEM CONTROL C.B.A.) CL-10
(TO DECK C.B.A) CN-C
(TO DECK C.B.A) CN-G
SEE WIRING DIAGRAM
SEE WIRING DIAGRAM

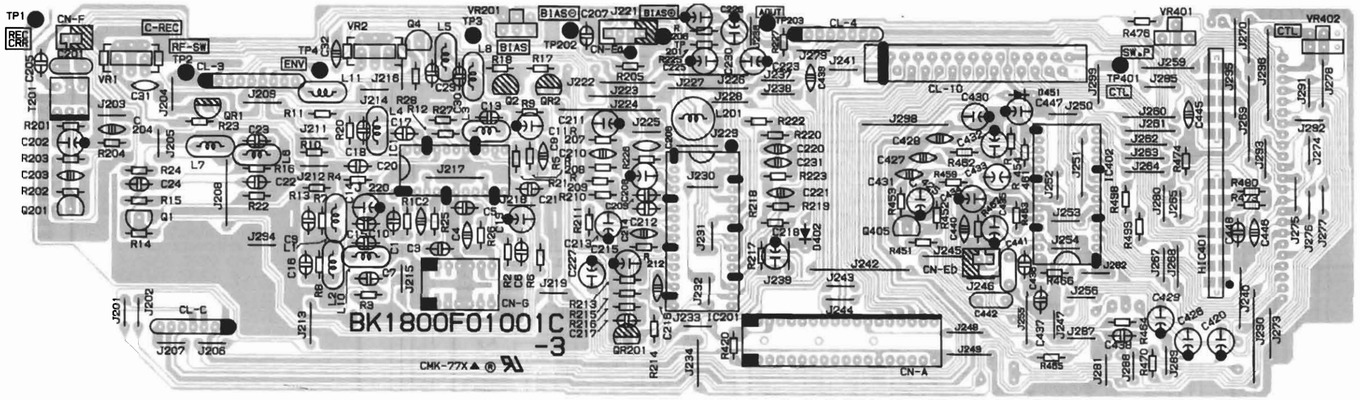
HEAD AMP/AUDIO/ SERVO C.B.A.

Ref. No.	Position
ICs	
HIC401	D-7
IC1	C-3
IC201	D-2
IC402	D-8
TRANSISTORS	
Q1	C-4
Q2	B-4
Q4	B-4
Q201	F-3
Q405	E-8
QR1	C-4
QR2	B-5
QR201	D-4
CONNECTORS	
CL-3	F-5
CL-4	F-6
CL-10	C-11
CN-A	A-6
CN-C	A-8
CN-E (1/2)	F-2
CN-E (2/2)	A-1
CL-Eb	A-2
CL-F	F-2
CN-F	F-1
CN-G	C-2
TEST POINTS	
TP1	B-3
TP2	F-5
TP4	C-3
TP201	E-2
TP202	D-2
TP203	E-5
TP401	D-9

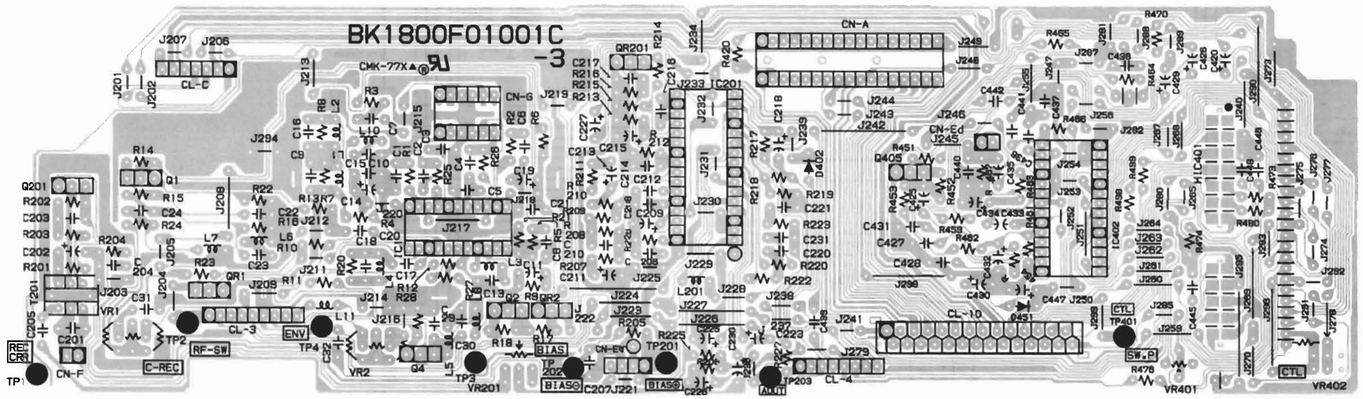
B8200DRW

HEAD AMP / AUDIO / SERVO C.B.A.

(TOP VIEW)

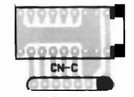


(BOTTOM VIEW)

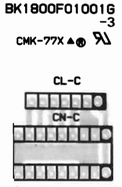


DRUM DECK CONN. C.B.A.

(TOP VIEW)



(BOTTOM VIEW)



HEAD AMP/AUDIO/SERVO C.B.A.

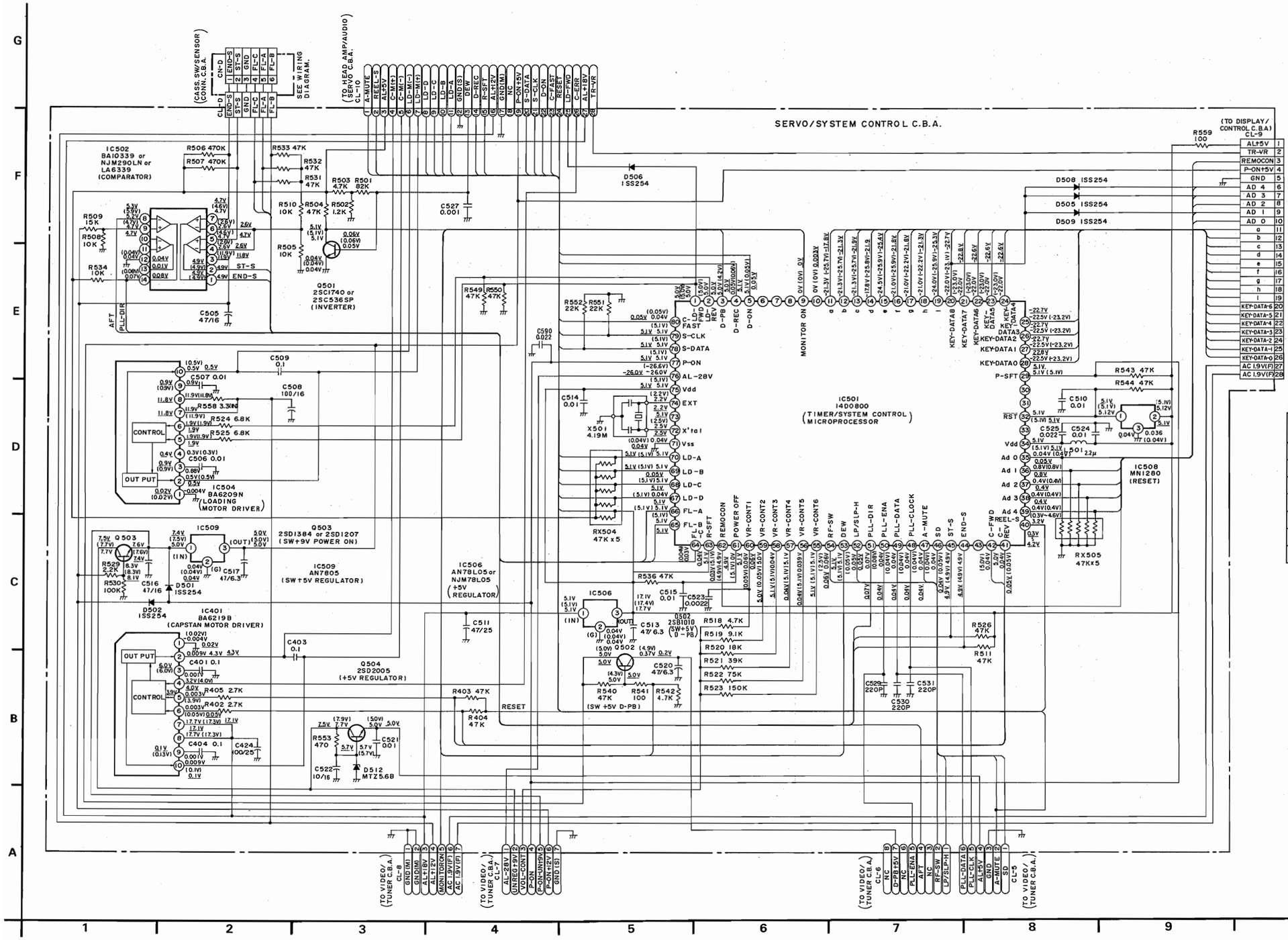
Ref. No.	Top	Bottom
ICs		
HIC402	D-6	B-6
IC1	E-3	B-3
IC201	D-4	B-4
IC401	D-7	B-6
IC508	E-2	B-2
TRANSISTORS		
Q1	D-2	B-2
Q2	E-3	A-3
Q4	E-3	A-3
Q201	D-1	B-1
Q405	D-5	B-5
Q504	E-4	A-4
QR1	E-2	A-2
QR2	E-4	A-3
QR201	D-4	B-4
DIODES		
D402	D-5	B-5
D451	E-6	A-6
D505	E-2	B-2
D508	E-2	B-2
D509	E-2	B-1
POTENTIOMETERS		
VR1	E-2	A-1
VR2	E-3	A-3
VR201	E-3	A-3
VR401	E-6	A-6
VR402	E-7	A-7
COILS		
L1	D-3	B-2
L2	D-3	B-2
L3	E-3	A-3
L4	E-3	A-3
L5	E-3	A-3
L6	E-2	B-2
L7	E-2	B-2
L8	E-3	A-3
L10	D-3	B-3
L11	E-3	A-3
L201	E-4	A-4
T201	E-1	A-1
TEST POINTS		
TP1	E-1	A-1
TP2	E-2	A-2
TP3	E-3	A-3
TP4	E-3	A-2
TP201	E-4	A-4
TP202	E-4	A-3
TP203	E-5	A-5
TP401	E-6	A-6
MISCELLANEOUS		
CL-3	E-2	A-2
CL-4	E-5	A-5
CL-10	E-5	A-5
CN-A	D-5	B-5
CL-C	D-2	B-2
CN-E	E-4	A-4
CN-Eb	D-5	B-5
CN-F	E-1	A-1
CN-G	D-3	B-3
CAPACITORS		
C1	D-3	B-3
C2	D-3	B-3
C3	D-3	B-3
C4	D-3	B-3
C5	D-3	B-3
C6	D-3	B-3
C7	D-3	B-3
C8	E-4	B-3
C9	D-2	B-2
C10	D-3	B-3
C11	E-4	A-3
C13	E-3	A-3
C14	D-3	B-3
C15	D-3	B-3
C16	D-2	B-2
C17	E-3	A-3
C18	E-3	B-3
C19	D-3	B-3
C20	E-3	B-3
C21	D-4	B-4
C22	D-2	B-2
C23	E-2	A-2
C24	D-2	B-2
C29	E-3	A-3
C30	E-3	A-3
C31	E-2	A-2
C201	E-1	A-1
C202	D-1	B-1
C203	D-1	B-1
C204	E-2	A-2
C205	E-1	A-1
C206	E-4	A-4
C207	E-4	A-4
C208	D-4	B-4
C209	D-4	B-4
C210	E-4	B-4
C211	E-4	A-4
C212	D-4	B-4
C213	D-4	B-4
C214	D-4	B-4
C215	D-4	B-4
C216	D-4	B-4
C217	D-4	B-4
C218	D-5	B-5
C220	E-5	B-5
C221	D-5	B-5
C223	E-5	A-5
C225	E-4	A-4
C226	E-4	A-4
C227	D-4	B-4
C230	E-4	A-4
C231	E-5	B-5
C420	D-7	B-6
C425	D-5	B-5
C426	D-7	B-6
C427	E-5	B-5
C428	E-5	A-5
C429	D-6	B-6
C430	E-6	A-5
C431	D-5	B-5
C432	E-6	A-5
C433	D-6	B-6
C434	D-5	B-5
C435	D-6	B-6
C436	D-6	A-6
C437	D-6	B-6
C438	D-6	B-6
C439	E-5	A-5
C440	D-5	B-5
C441	D-6	B-6
C442	D-6	B-6
C445	E-7	A-6
C446	D-7	B-7
C447	E-6	A-6
C448	D-7	B-7
C505	E-4	B-4
C511	E-4	B-4
C514	D-3	B-3
RESISTORS		
R1	D-3	B-3
R2	D-2	B-2
R3	D-3	B-3
R4	D-3	B-3
R5	E-4	B-3
R6	D-4	B-3
R7	D-3	B-2
R8	D-3	B-2
R9	E-4	B-4
R10	E-3	B-2
R11	E-3	A-2
R12	E-3	A-3
R13	D-2	B-2
R14	D-2	B-2
R15	D-2	B-2
R16	D-2	B-2
R17	E-4	A-3
R18	E-3	A-3
R20	E-3	A-3
R21	E-3	B-4
R22	D-2	B-2
R23	E-2	A-2
R24	D-2	B-2
R25	D-3	B-3
R26	D-3	B-3
R27	E-3	A-3
R28	E-3	A-3
R201	E-1	A-1
R202	D-1	B-1
R203	E-1	B-1
R204	E-2	B-1
R205	E-4	A-4
R206	E-4	A-4
R207	E-4	A-4
R208	E-4	B-4
R209	D-4	B-4
R210	D-4	B-4
R211	D-4	B-4
R212	D-4	B-4
R213	D-4	B-4
R214	D-4	B-4
R215	D-5	B-4
R216	D-5	B-4
R217	D-5	B-4
R218	D-5	B-4
R219	D-5	B-5
R220	E-5	A-5
R222	E-5	A-5
R223	D-5	B-5
R225	E-4	A-4
R226	E-4	B-4
R227	E-5	A-4
R420	D-4	B-4
R451	D-5	B-5
R452	D-5	B-5
R453	D-5	B-5
R454	E-6	A-6
R459	D-5	B-5
R461	D-6	B-6
R462	E-5	B-5
R463	D-6	B-6
R464	D-6	B-6
R465	D-6	B-6
R466	D-6	B-6
R467	D-6	B-5
R470	D-6	C-6
R473	D-7	B-7
R474	E-7	B-6
R476	E-6	A-6
R480	D-7	B-7
R498	D-6	B-6
R499	D-6	B-6
R505	E-4	B-4
R510	E-4	B-4
R531	E-4	B-4
R532	E-4	B-4
R533	E-4	B-4
R553	E-4	A-4

DRUM DECK CONN. C.B.A.

Ref. No.	Top	Bottom
MISCELLANEOUS		
CL-C	E-8	E-9
CN-C	E-8	E-9

B8200DRW

SYSTEM CONTROL SCHEMATIC DIAGRAM



IC501 KEY MATRIX CHART

SCAN OUT	KEY DATA IN				
	AD4 (PIN39)	AD3 (PIN38)	AD2 (PIN37)	AD1 (PIN36)	AD0 (PIN35)
KEY-DATA0 (PIN28)	AUTO MEMORY	ERASE	QTR LENGTH	F.FWD	POWER
KEY-DATA1 (PIN27)	ADD		PRESET	REW	STOP/ EJECT
KEY-DATA2 (PIN26)	VOLUME UP	CHANNEL UP		PAUSE	RECORD
KEY-DATA3 (PIN25)	VOLUME DOWN	CHANNEL DOWN		QTR START	PLAY
KEY-DATA4 (PIN24)			MONITOR		
KEY-DATA5 (PIN23)	HRC	STD	TV	SLP	LP
KEY-DATA6 (PIN22)				AUTO REPEAT	

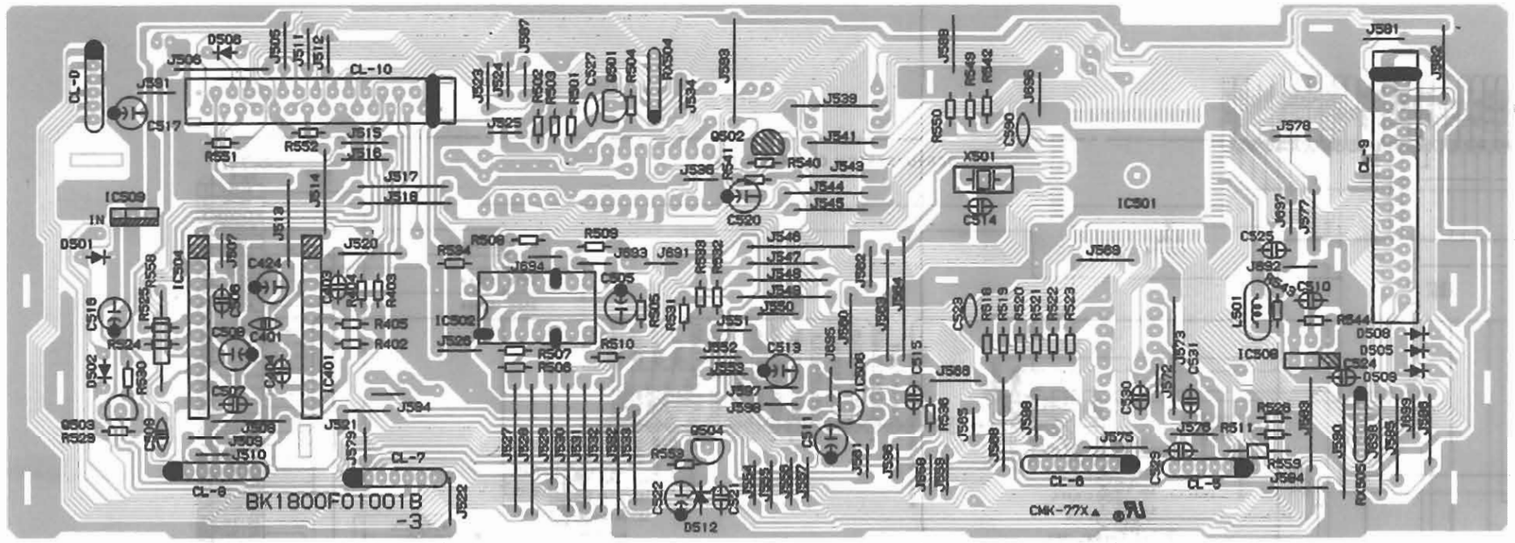
SYSTEM CONTROL C.B.A.

Ref. No.	Position
ICs	
IC401	C-2
IC501	D-7
IC502	F-1
IC504	D-2
IC506	C-5
IC508	D-9
IC509	C-2
TRANSISTORS	
Q501	E-3
Q502	B-5
Q503	C-1
Q504	B-3
CONNECTORS	
CL-5	A-8
CL-6	A-7
CL-7	A-4
CL-8	A-3
CL-9	F-10
CL-10	G-3
CL-D	F-2

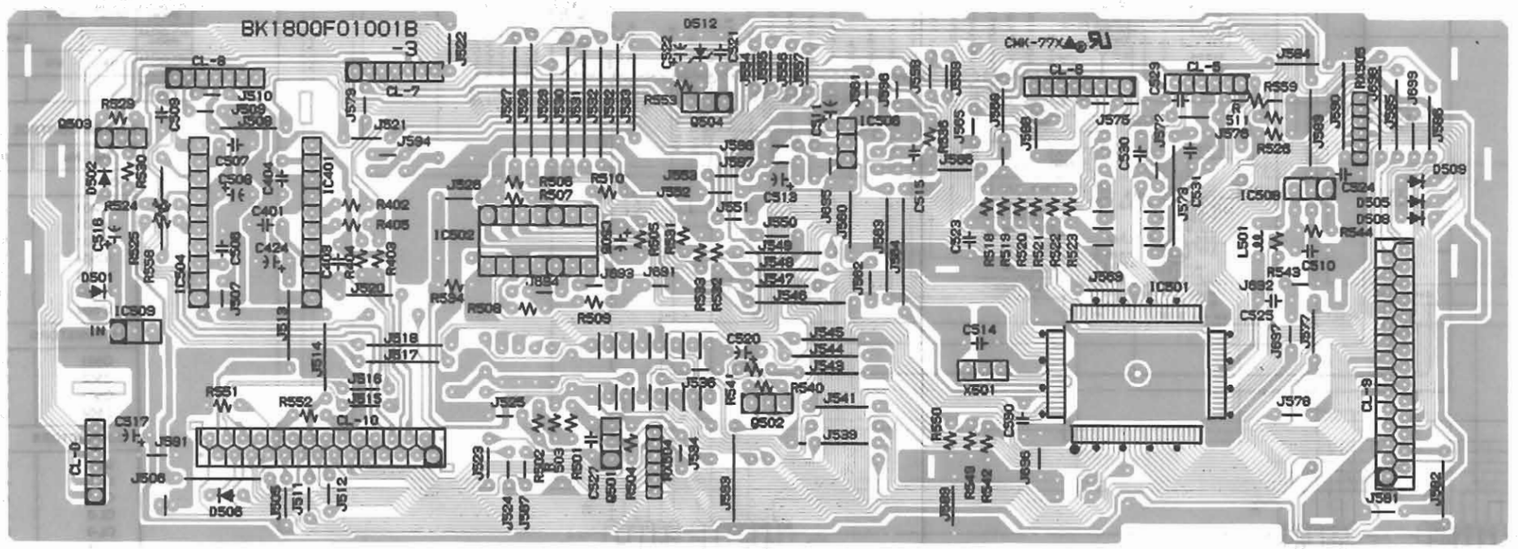
B8200DRW

SYSTEM CONTROL C.B.A.

(TOP VIEW)

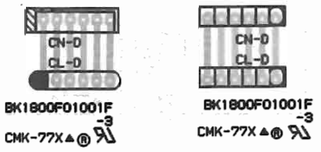


(BOTTOM VIEW)



CASS. SW / SENSOR CONN. C.B.A.

(TOP VIEW) (BOTTOM VIEW)



SYSTEM CONTROL C.B.A.

Ref. No.	Top	Bottom
ICs		
IC401	D-2	B-2
IC501	E-5	A-5
IC502	E-3	B-3
IC504	E-2	B-2
IC506	D-4	C-4
IC508	D-6	B-6
IC509	E-2	B-2
TRANSISTORS		
Q501	E-3	A-3
Q502	E-4	A-4
Q503	D-1	C-1
Q504	D-4	C-4
DIODES		
D501	E-1	B-1
D502	D-1	B-1
D505	D-6	B-6
D506	F-2	A-2
D508	D-6	B-6
D509	D-6	B-6
D512	D-4	C-4
COIL		
L501	E-6	B-6
MISCELLANEOUS		
CL-5	D-6	C-6
CL-6	D-5	C-5
CL-7	D-3	C-3
CL-8	D-2	C-2
CL-9	E-6	B-6
CL-10	E-2	A-2
CL-D	E-1	A-1
RX504	E-4	A-4
RX505	D-6	C-6
X501	E-5	B-5
CAPACITORS		
C401	D-2	B-2
C403	E-2	B-2
C404	D-2	B-2
C424	E-2	B-2
C505	E-3	B-3
C506	E-2	B-2
C507	D-2	B-2
C508	D-2	B-2
C509	D-2	C-2
C510	E-6	B-6
C511	D-4	C-4
C513	D-4	B-4
C514	E-5	B-5
C515	D-4	B-5
C516	E-1	B-1
C517	E-2	A-2
C520	E-4	B-4
C521	D-4	C-4
C522	D-4	C-4
C523	E-5	B-5
C524	D-6	B-6
C525	E-6	B-6

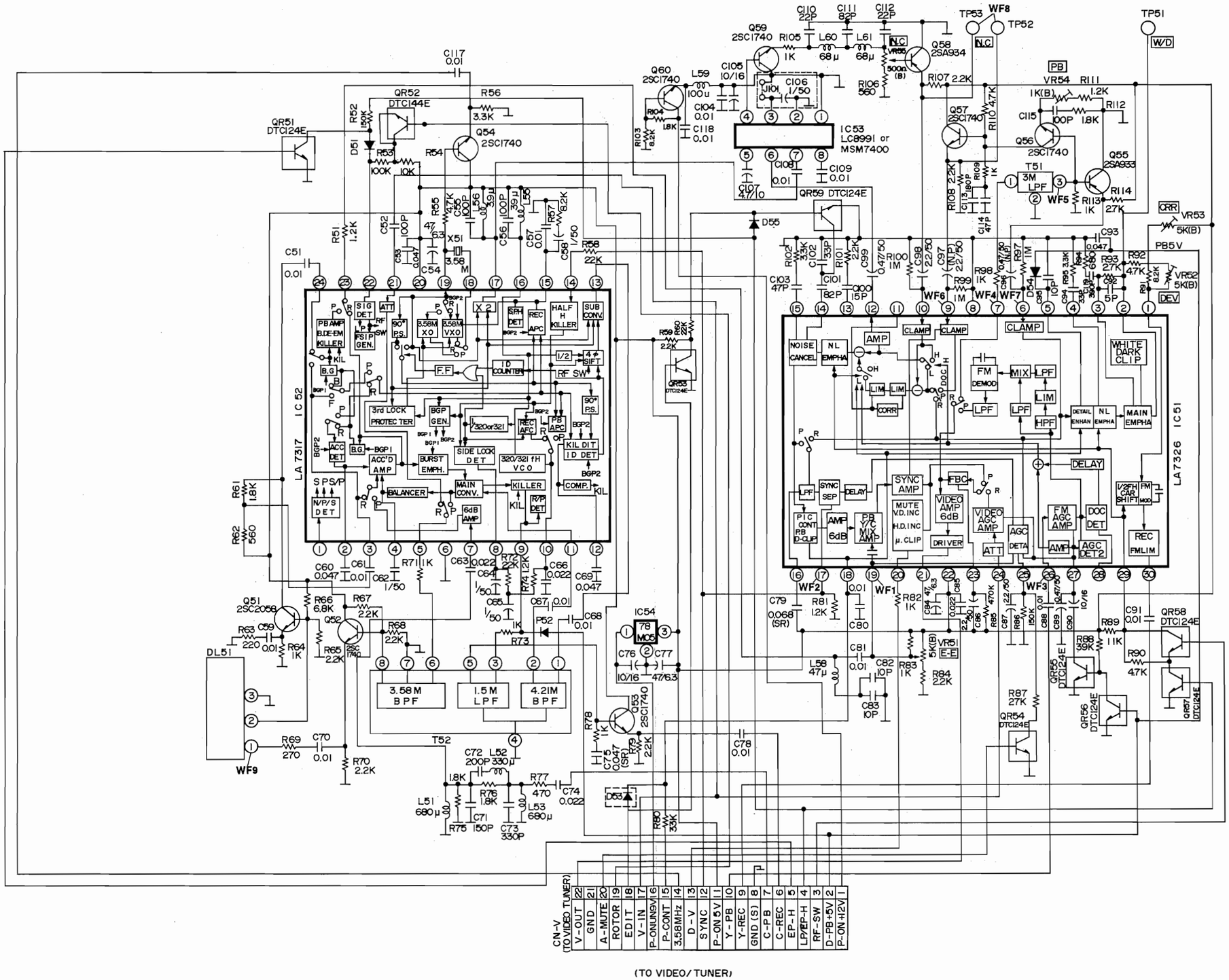
Ref. No.	Top	Bottom
C527	E-3	A-3
C529	D-5	B-5
C530	D-5	B-5
C531	D-6	B-6
C590	E-5	A-5
RESISTORS		
R402	D-3	B-3
R403	E-3	B-3
R404	E-2	B-2
R405	D-3	B-3
R501	E-3	A-3
R502	E-3	A-3
R503	E-3	A-3
R504	E-3	A-3
R505	E-3	B-4
R506	D-3	B-3
R507	D-3	B-3
R508	E-3	B-3
R509	E-3	B-3
R510	D-3	B-3
R511	D-6	C-6
R518	E-5	B-5
R519	E-5	B-5
R520	E-5	B-5
R521	E-5	B-5
R522	E-5	B-5
R523	E-5	B-5
R524	D-2	B-1
R525	E-2	B-2
R526	D-6	B-6
R529	D-1	C-1
R530	D-2	B-2
R531	E-4	B-4
R532	E-4	B-4
R533	E-4	B-4
R534	E-3	B-3
R536	D-5	C-5
R540	E-4	B-4
R541	E-4	B-4
R542	E-5	A-5
R543	E-6	B-6
R544	E-6	B-6
R549	E-5	A-5
R550	E-5	A-5
R551	E-2	B-2
R552	E-2	B-2
R553	D-4	C-4
R558	E-2	B-2

CASS. SW/SENSOR CONN. C.B.A.

Ref. No.	Top	Bottom
MISCELLANEOUS		
CL-D	E-7	E-8
CN-D	F-7	F-8

Y / C PROCESS SCHEMATIC DIAGRAM

(WF 1~9 = Waveform Check Point)

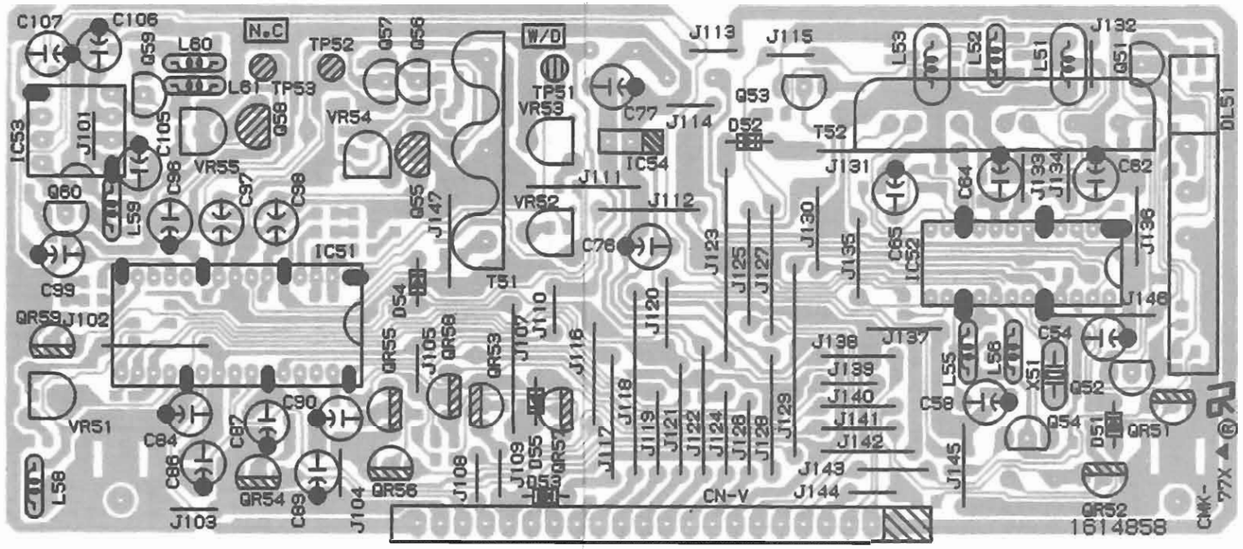


(TO VIDEO/ TUNER)

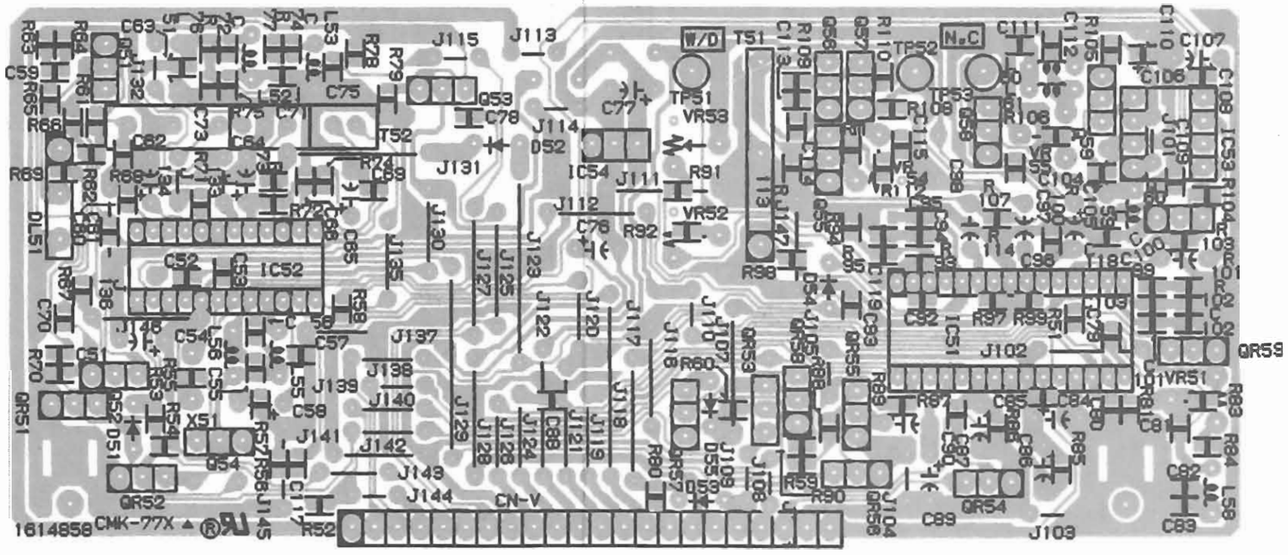
B8200DRW

Y/C PROCESS C.B.A.

(TOP VIEW)



(BOTTOM VIEW)



DECK C.B.A.

E

D

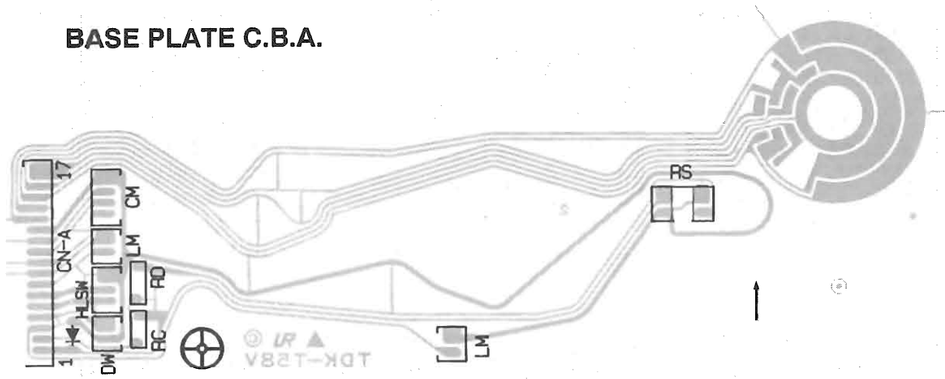
C

B

A

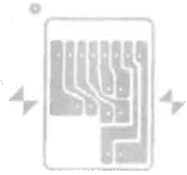
1 2 3 4 5 6 7

BASE PLATE C.B.A.

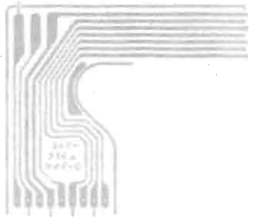


FULL ERASE HEAD C.B.A.

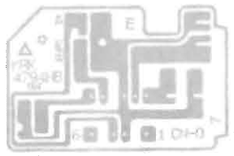
ACE HEAD C.B.A.



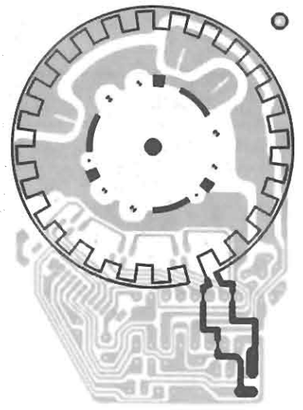
START SENSOR C.B.A.

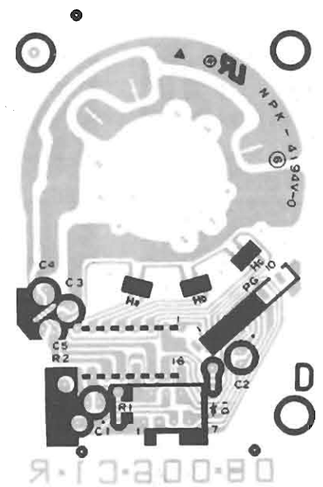


DECK, FRONT LOADING C.B.A.

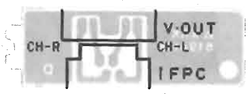


DRUM MOTOR C.B.A.





VIDEO OUT C.B.A.

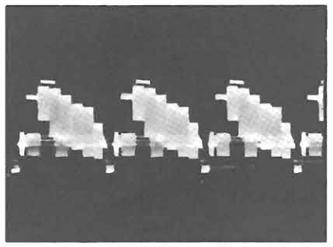


END SENSOR C.B.A.

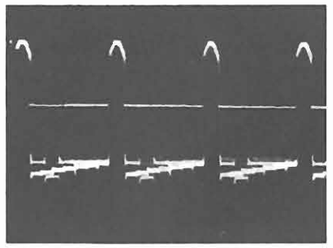
LAMP C.B.A.

B8200DRW

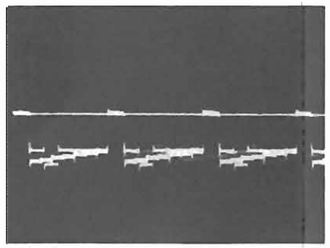
WAVEFORM PHOTOGRAPHS [TV]



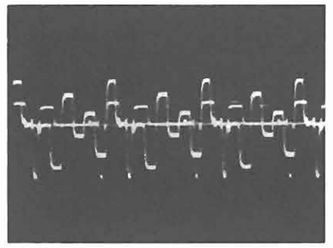
Point: A 1.5Vp-p
1Div=20 μ S 1Div=0.5V



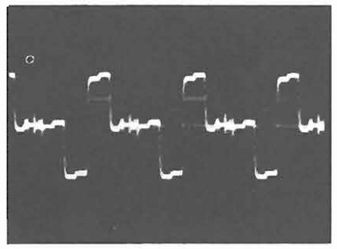
Point: B 9.6Vp-p
1Div=20 μ S 1Div=2V



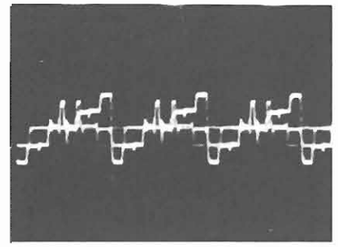
Point: C 3.6Vp-p
1Div=20 μ S 1Div=2V



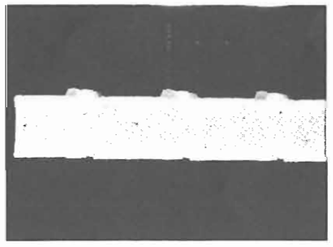
Point: D 3.2Vp-p
1Div=20 μ S 1Div=1V



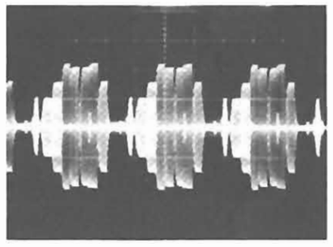
Point: E 3.2Vp-p
1Div=20 μ S 1Div=1V



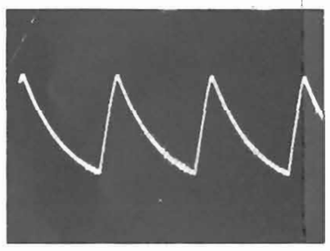
Point: F 1.2Vp-p
1Div=1V 1Div=0.5V



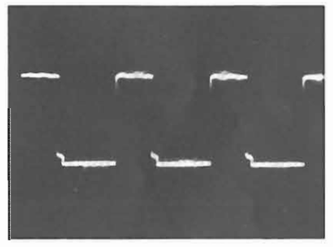
Point: G 600Vp-p
1Div=20 μ S 1Div=250V



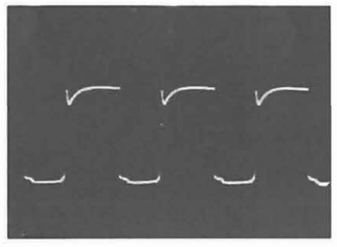
Point: H 850mVp-p
1Div=20 μ S 1Div=0.2V



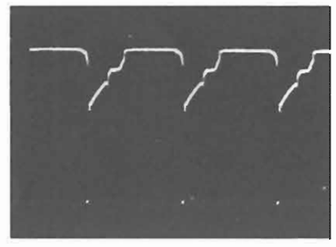
Point: I 1.6Vp-p
1Div=20 μ S 1Div=0.5V



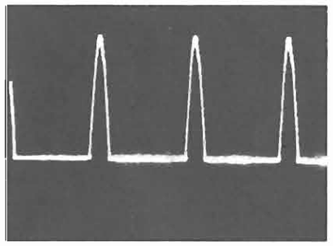
Point: J 1.5Vp-p
1Div=20 μ S 1Div=0.5V



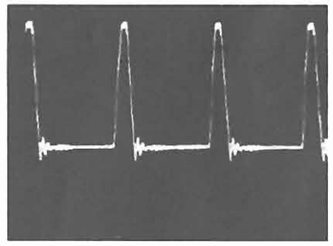
Point: K 16Vp-p
1Div=20 μ S 1Div=50V



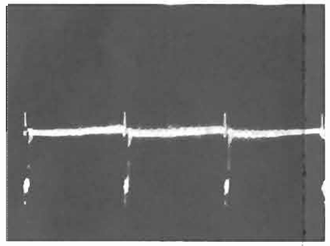
Point: L 10Vp-p
1Div=20 μ S 1Div=2V



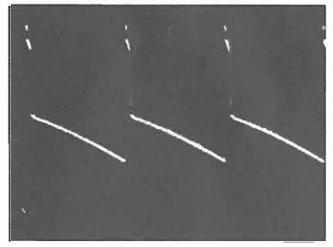
Point: M 1KVp-p
1Div=20 μ S 1Div=250V



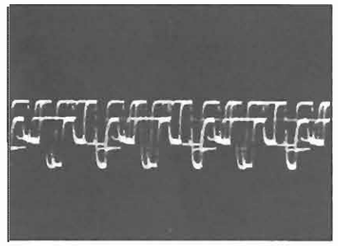
Point: N 20Vp-p
1Div=20 μ S 1Div=5V



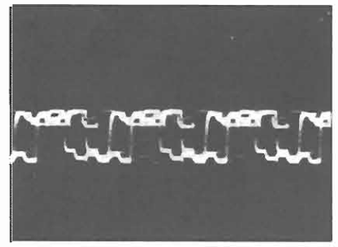
Point: O 1.5Vp-p
1Div=5mS 1Div=0.5V



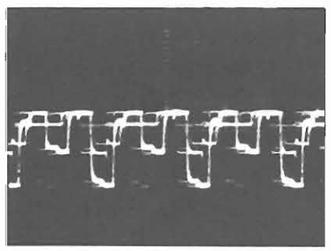
Point: P 4.4Vp-p
1Div=5mS 1Div=1V



Point: Q 110Vp-p
1Div=20 μ S 1Div=50V



Point: R 90Vp-p
1Div=20 μ S 1Div=50V



Point: S 140Vp-p
1Div=20 μ S 1Div=50V

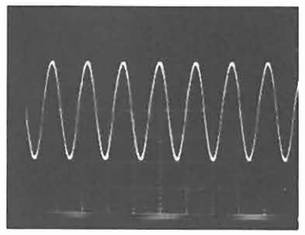
WAVEFORM NOTES:

* **Operation: Input NTSC color bar signal**
  Brightness: Center
  Contrast: Center
  Color: Center
  Tint: Center

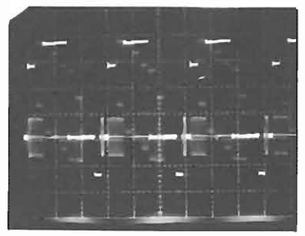
WAVEFORM NOTES:

* Operation: Input NTSC color bar signal

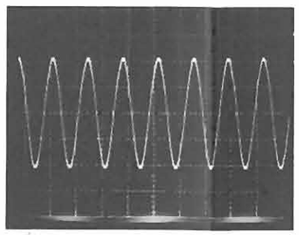
WAVEFORM PHOTOGRAPHS [VCR UNIT]



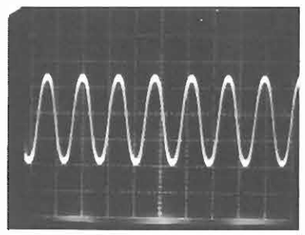
WF1
REC/PB SP
20mV/div. ×10 0.2 μs



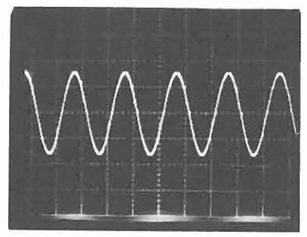
WF5
REC SP
20mV/div. ×10 20 μs



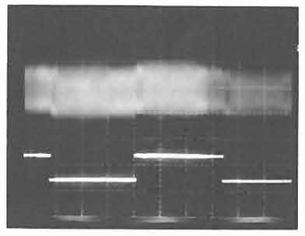
WF9
REC SP
1V/div. ×10 10 μs



WF13
REC/PB SP
5mV/div. ×10 1ms

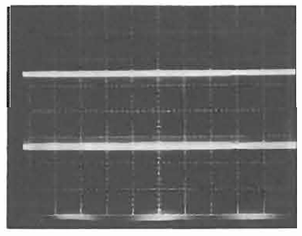


WF17
STOP
50mV/div. ×10 0.5ms

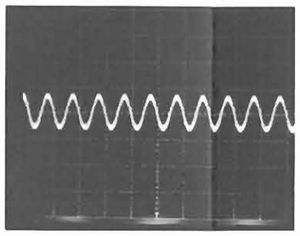


UPPER WF2
PB SP
10mV/div. ×10 5ms

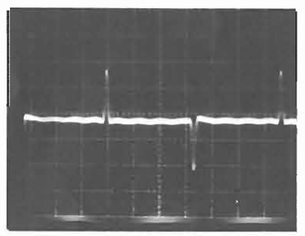
LOWER WF3
0.5V/div. ×10 5ms



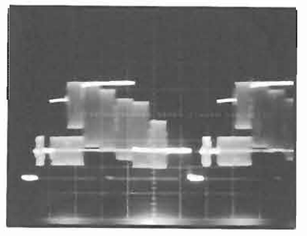
WF6
REC SP
50mV/div. ×10 2ms



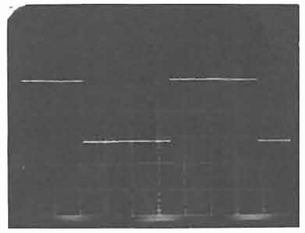
WF10
PB SP
5mV/div. ×10 1ms



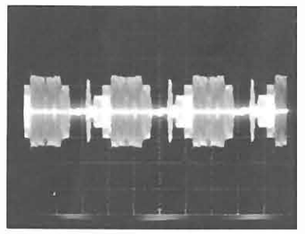
WF14
REC/PB SP
5mV/div. ×10 5ms



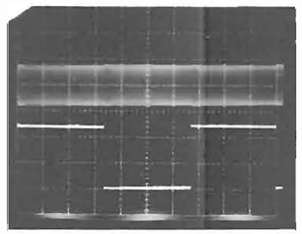
WF18
STOP
50mV/div. ×10 20 μs



WF3
PB SP
0.2V/div. ×10 5ms

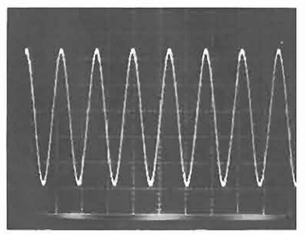


WF7
REC SP
10mV/div. ×10 20 μs

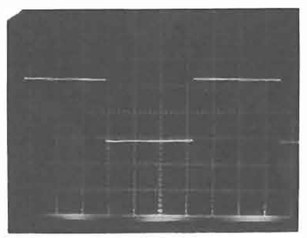


UPPER WF11
REC SP
10mV/div. ×10 5ms

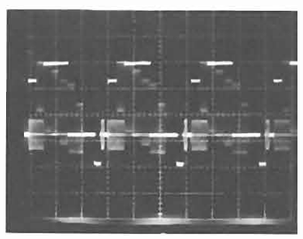
LOWER WF19
0.2V/div. ×10



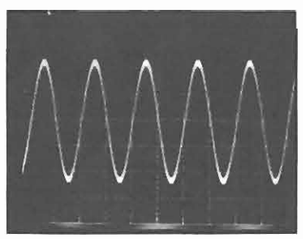
WF15
REC/PB SP
10mV/div. ×10 1ms



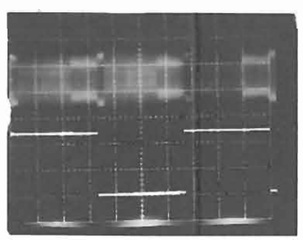
WF19
PB SP
0.2V/div. ×10 5ms



WF4
REC/PB SP
50mV/div. ×10 20 μs

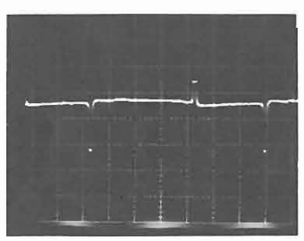


WF8
REC SP
50mV/div. ×10 0.5ms



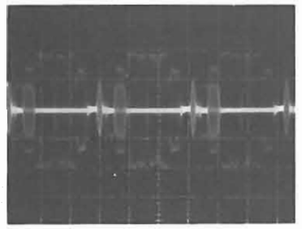
UPPER WF12
PB SP
10mV/div. ×10 5ms

LOWER WF19
0.2V/div. ×10

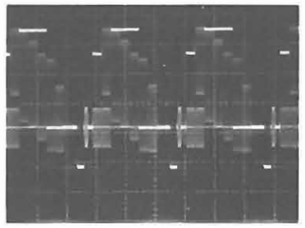


WF16
PB SP
0.1mV/div. ×10 5ms

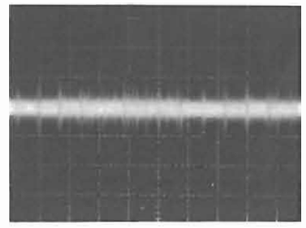
WAVEFORM PHOTOGRAPHS [Y/C PROCESS]



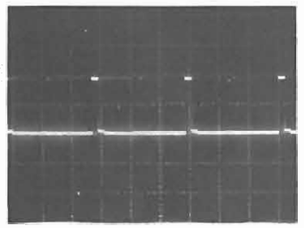
WF1 REC/PB SP
5mV/div. ×10 20μs/div.



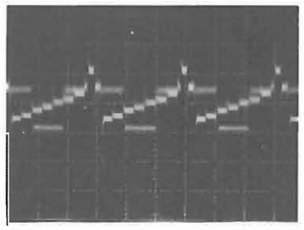
WF4(2) REC SP
20mV/div. ×10 20μs/div.



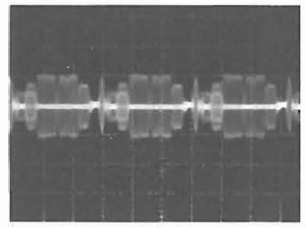
WF8 PB SP
5mV/div. ×10 10μs/div.



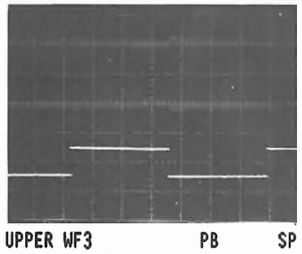
WF2 REC/PB SP
0.2V/div. ×10 20μs/div.



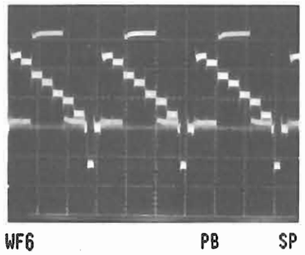
WF5 PB SP
10mV/div. ×10 20μs/div.



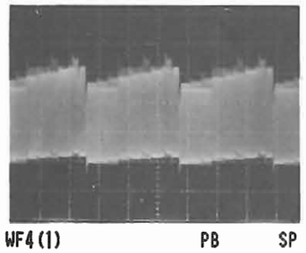
WF9 REC/PB SP
5mV/div. ×10 20μs/div.



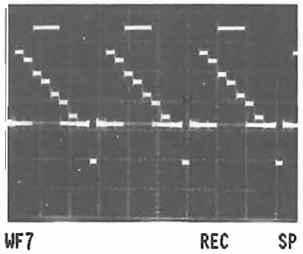
UPPER WF3 PB SP
10mV/div. ×10 5 ms/div.



WF6 PB SP
10mV/div. ×10 20μs/div.

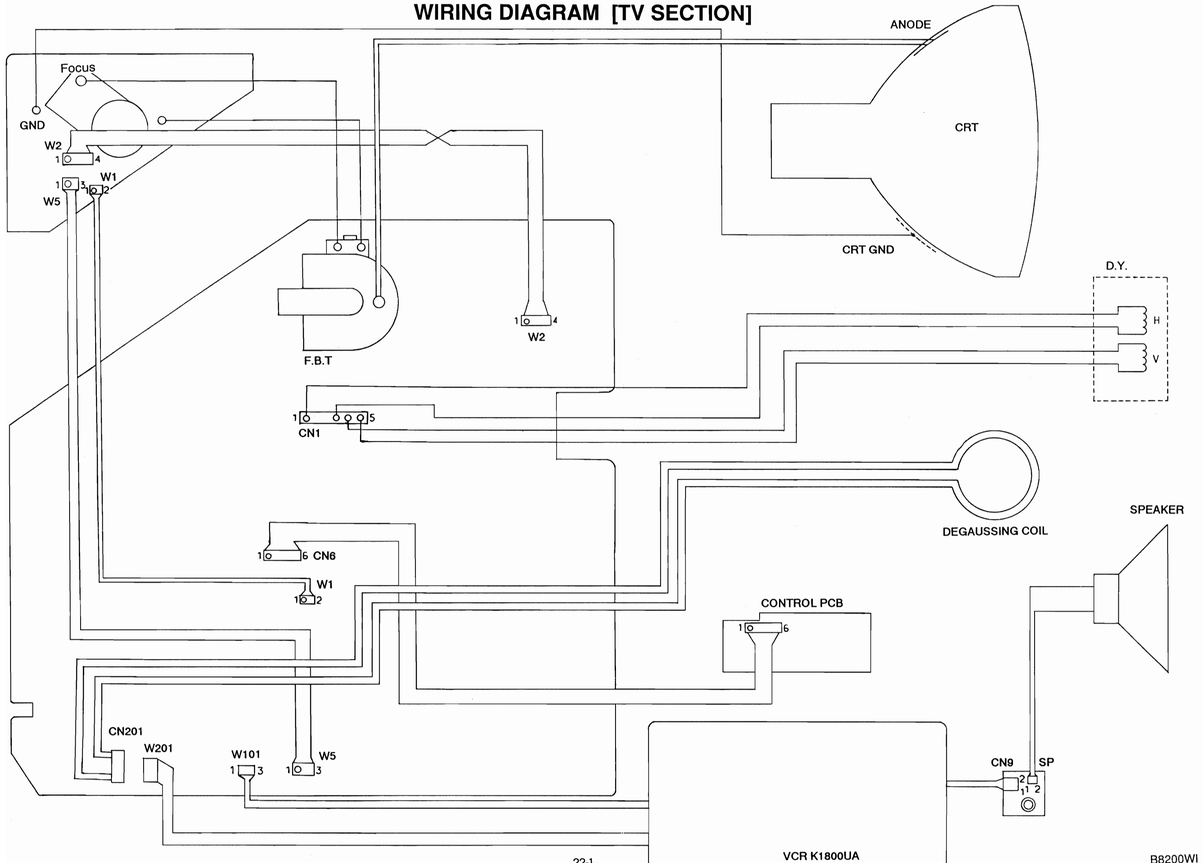


WF4(1) PB SP
50mV/div. ×10 20μs/div.



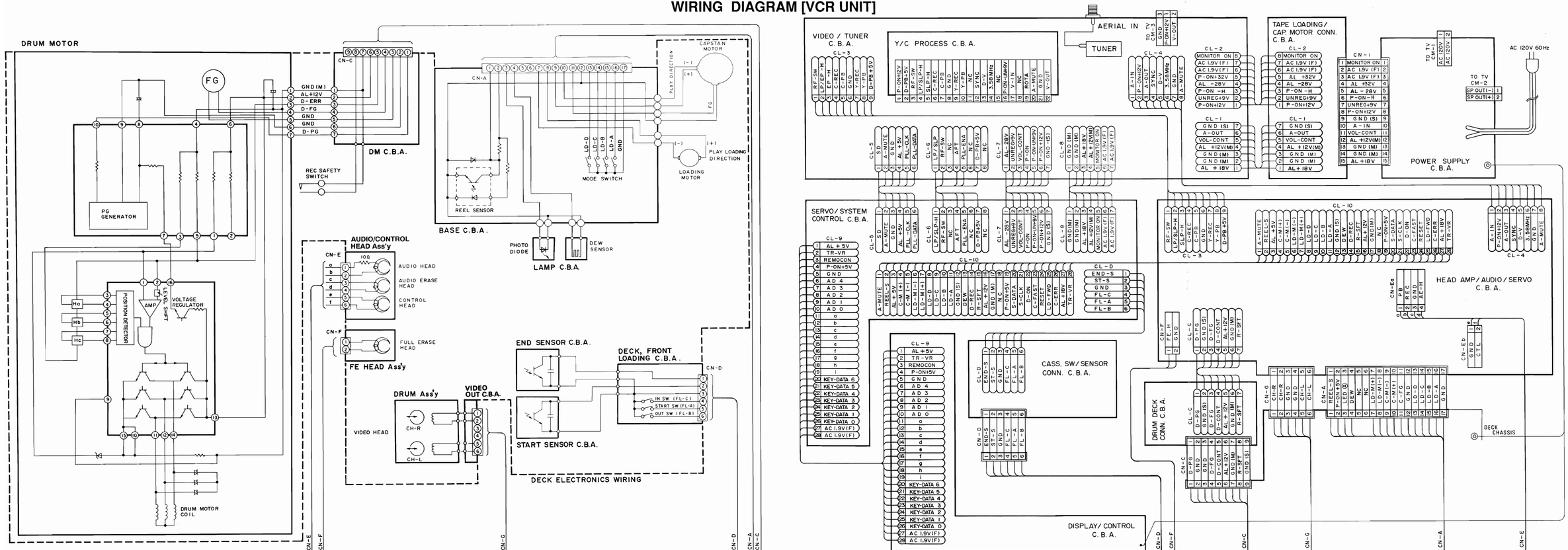
WF7 REC SP
10mV/div. ×10 20μs/div.

WIRING DIAGRAM [TV SECTION]



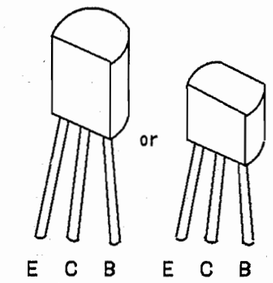
B8200WI

WIRING DIAGRAM [VCR UNIT]



K1800WI

LEAD IDENTIFICATION



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2SD1384
DTC124

2SB892
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2SA608
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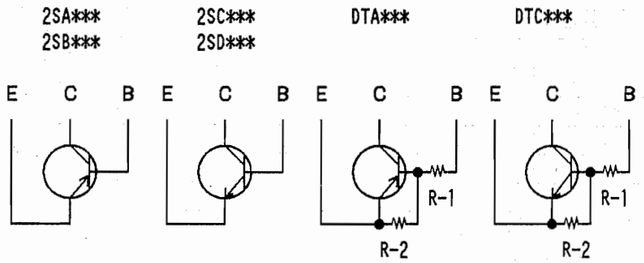
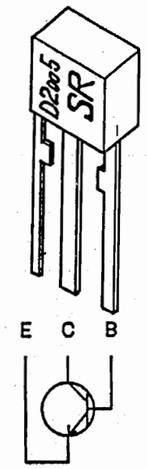
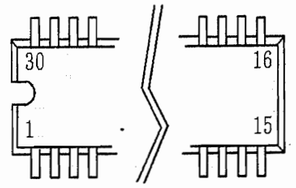
2SA1346

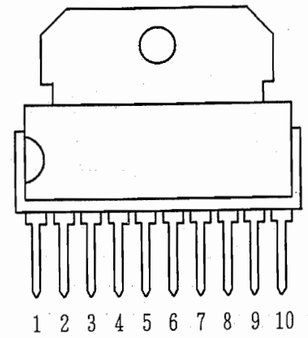




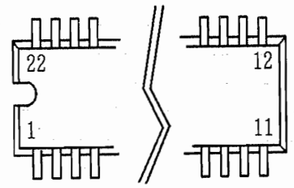
2SD2005



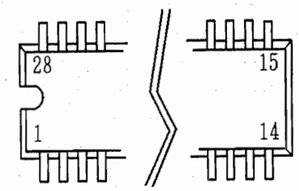
LA7326



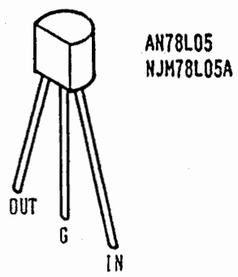
BA6219B



HA118041



MN6748FVAN



AN78L05
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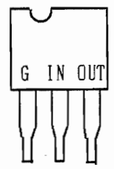
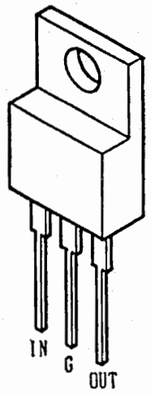


MN1280



AN7812
AN7805
AN7818
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AN78M05

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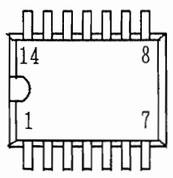
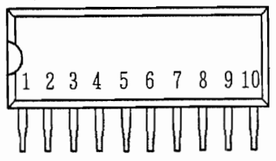
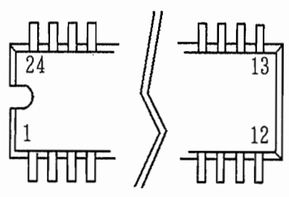


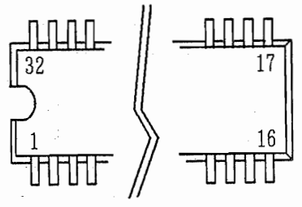
BA10339



LA7210
BA6209N



LA7317



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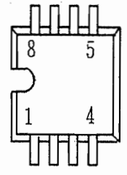
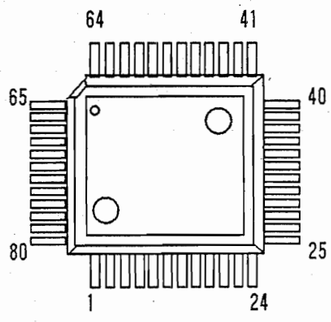


LC8991
MSM7400



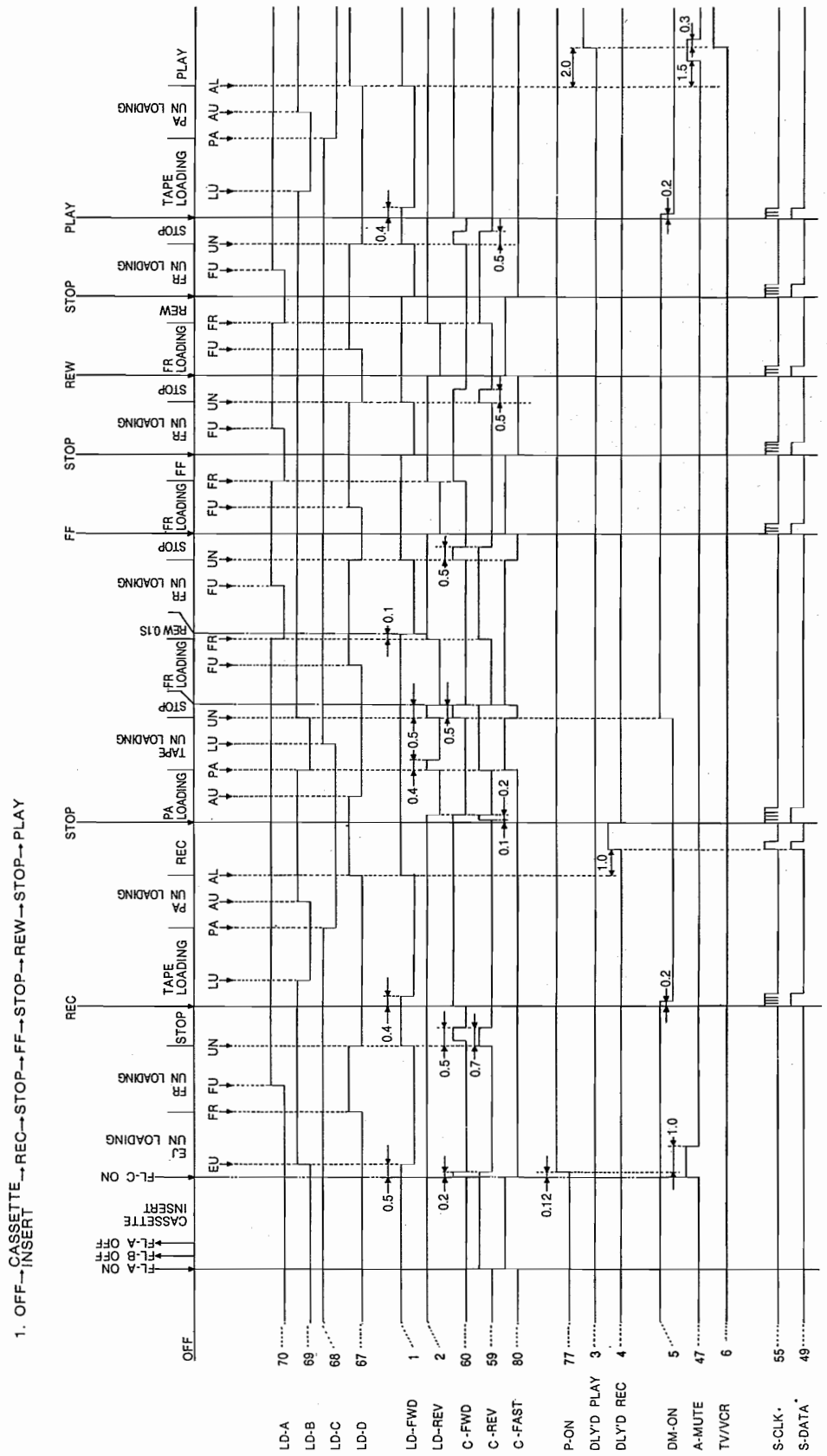
CXP50112

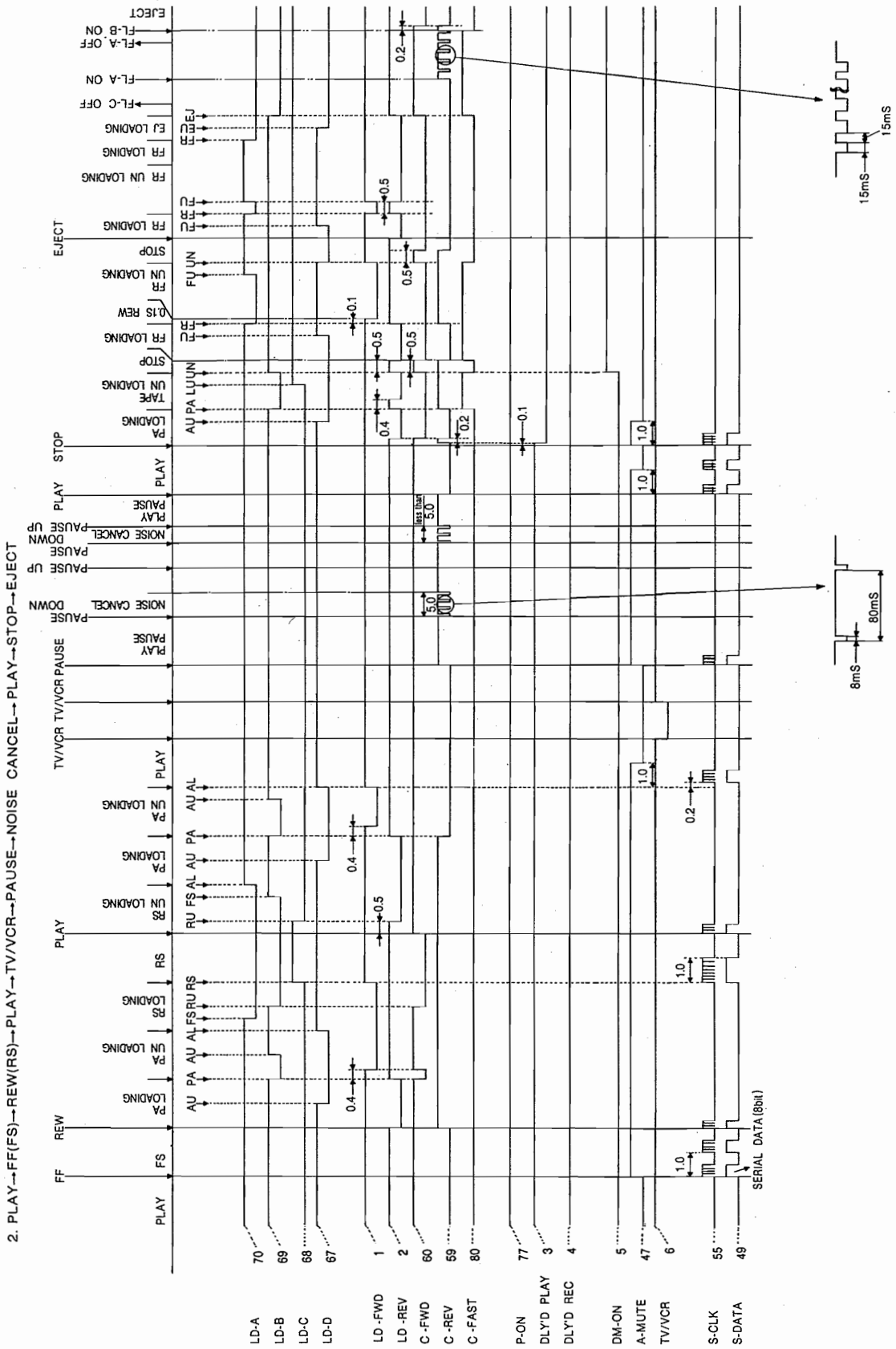
IC PIN FUNCTION DESCRIPTION

14DO800
(System Control / TIMER IC)

Pin No	IN/OUT	Signal name	Function	Active Level
1	OUT	LD-FWD	Tape Loading / Cassette Loading Motor Control (FWD)	H
2	OUT	LD-REV	Tape Loading / Cassette Loading Motor Control (REV)	H
3	OUT	D-PB	Delayed Playback Control	L
4	OUT	D-REC	Delayed Record Control	H
5	OUT	D-ON	Drum Rotation Output	L
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	OUT	MONITOR ON	Monitor ON	L
10	-	-	-	-
11	OUT	a	Display Segment Output	H
12	OUT	b	Display Segment Output	H
13	OUT	c	Display Segment Output	H
14	OUT	d	Display Segment Output	H
15	OUT	e	Display Segment Output	H
16	OUT	f	Display Segment Output	H
17	OUT	g	Display Segment Output	H
18	OUT	h	Display Segment Output	-
19	OUT	i	Display Segment Output	-
20	IN	KEY-DATA8	Key Scan 4bit Parallel Input	H
21	IN	KEY-DATA7	Key Scan 4bit Parallel Input	H
22	IN	KEY-DATA6	Key Scan 4bit Parallel Input	H
23	IN	KEY-DATA5	Key Scan 4bit Parallel Input	H
24	IN	KEY-DATA4	Key Scan 4bit Parallel Input	H
25	IN	KEY-DATA3	Key Scan 4bit Parallel Input	H
26	IN	KEY-DATA2	Key Scan 4bit Parallel Input	H
27	IN	KEY-DATA1	Key Scan 4bit Parallel Input	H
28	IN	KEY-DATA0	Key Scan 4bit Parallel Input	H
29	IN	P-SFT	Power Abnormal Detector	L
30	-	-	-	-
31	-	-	-	-
32	IN	RST	Reset at Reset Signal Input "L", Normal at "H"	L
33	-	-	-	-
34	IN	VDD	5V (POWER)	+5V
35	IN	AD0	Key Scan Signal Input	H
36	IN	AD1	Key Scan Signal Input	H
37	IN	AD2	Key Scan Signal Input	H
38	IN	AD3	Key Scan Signal Input	H
39	IN	AD4	Key Scan Signal Input	H
40	IN	REEL-S	Reel Sensor Pulse Input	-
41	OUT	C-REV	Capstan Motor Reverse	H
42	OUT	C-FWD	Capstan Motor Forward	H
43	-	-	-	-
44	IN	END-S	Tape End Position Detector	L
45	IN	ST-S	Tape Start Position Detector	L
46	IN	SD	Tuner SYNC Signal Detector	L
47	OUT	A-MUTE	Audio Mute Signal	H
48	OUT	PLL-CLOCK	Tuner Control Signal (Clock)	H→L
49	OUT	PLL-DATA	Tuner Control Signal (DATA)	H or L
50	OUT	PLL-ENA	Tuner Control Signal	H
51	OUT	PLL-DIR	Tuner AFT Voltage Input,"H" at under 6V of AFT Voltage	H
52	IN	LP/EP-H	Tape Speed	H
53	IN	DEW	Dew Detector	L
54	IN	RF-SW	Switching Pulse	H or L
55	OUT	VR-CONT6	Volume Control Signal	H or L
56	OUT	VR-CONT5	Volume Control Signal	H or L
57	OUT	VR-CONT4	Volume Control Signal	H or L
58	OUT	VR-CONT3	Volume Control Signal	H or L
59	OUT	VR-CONT2	Volume Control Signal	H or L
60	OUT	VR-CONT1	Volume Control Signal	H or L
61	IN	POWER OFF	"L" at Power Failure	L
62	IN	REMOCON	Remote Control Serial Signal Input	L
63	IN	R-SFT	Erasure Prevention Switch	H
64	IN	FL-C	Cassette In Detector	L
65	IN	FL-B	Cassette Out Detector	L
66	IN	FL-A	Cassette Down Start Detector	L
67	IN	LD-D	Tape Loading Position Detector	L
68	IN	LD-C	Tape Loading Position Detector	L
69	IN	LD-B	Tape Loading Position Detector	L
70	IN	LD-A	Tape Loading Position Detector	L
71	IN	VSS	GND	OV
72	OUT	X'TAL	Crystal Oscillator 4.19MHZ	~
73	-	-	-	-
74	IN	EXT	Crystal Oscillator 4.19MHZ	~
75	IN	VDD	Power 5V	+5V
76	IN	-28V	-28V	-28V
77	OUT	P-ON-H	POWER - ON Control	H
78	OUT	S-DATA	Servo Serial Data	H or L
79	OUT	S-CLK	Servo IC Timing Clock	H→L
80	OUT	C-FAST	Capstan Motor High Speed	H

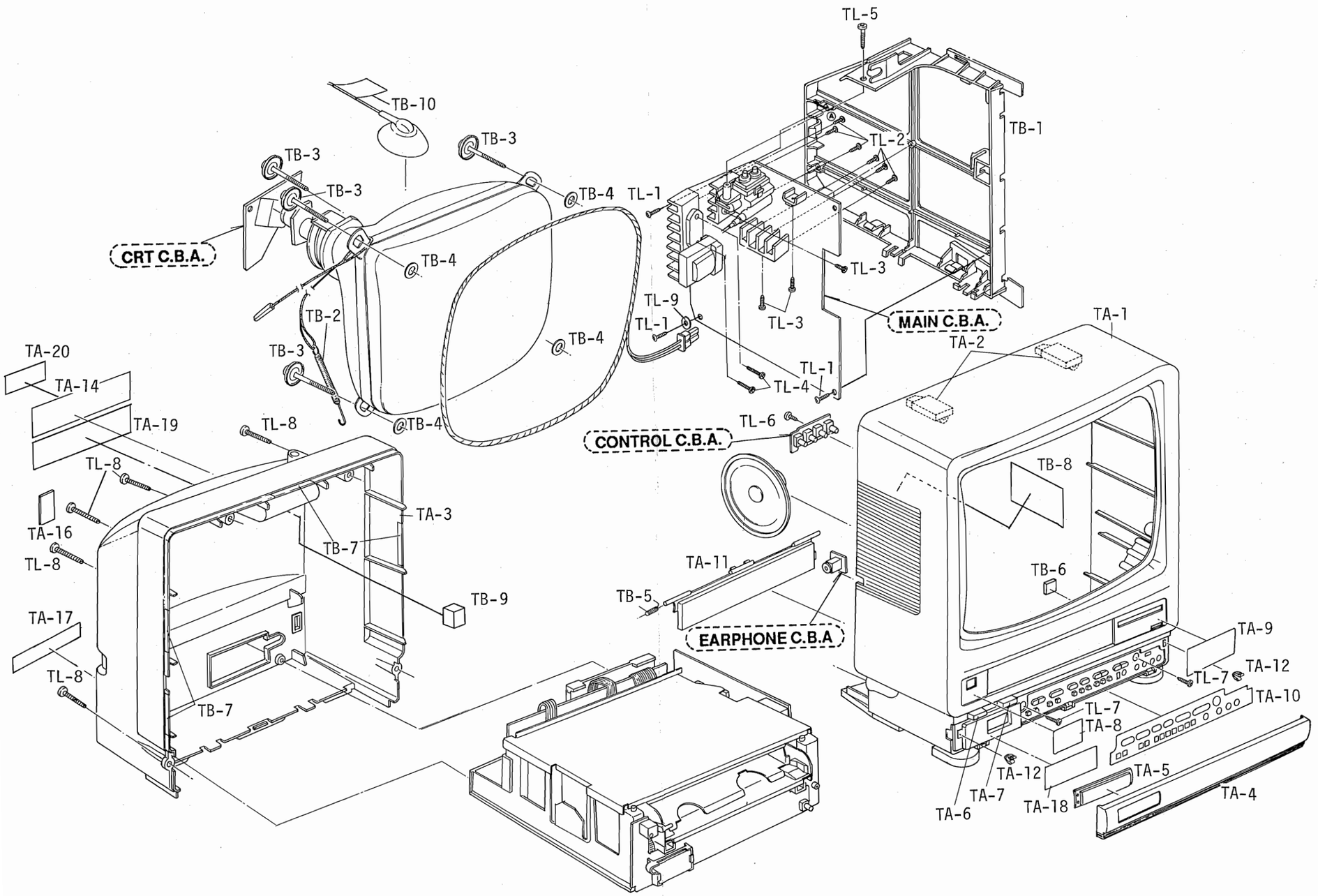
SYSTEM CONTROL TIMING CHART





TV CABINET EXPLODED VIEW

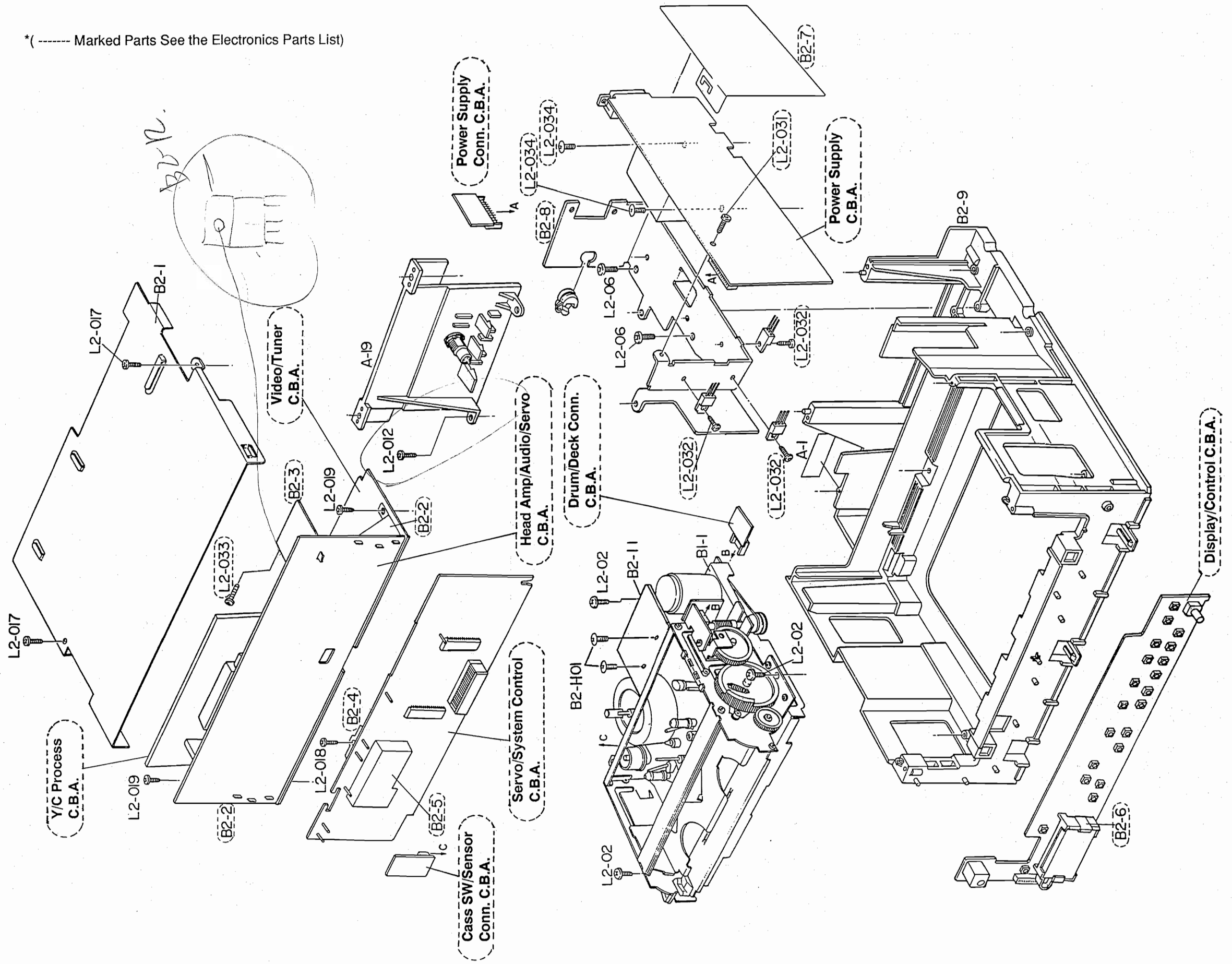
*(------- Marked Parts See the Electronics Parts List)



B8200CAB

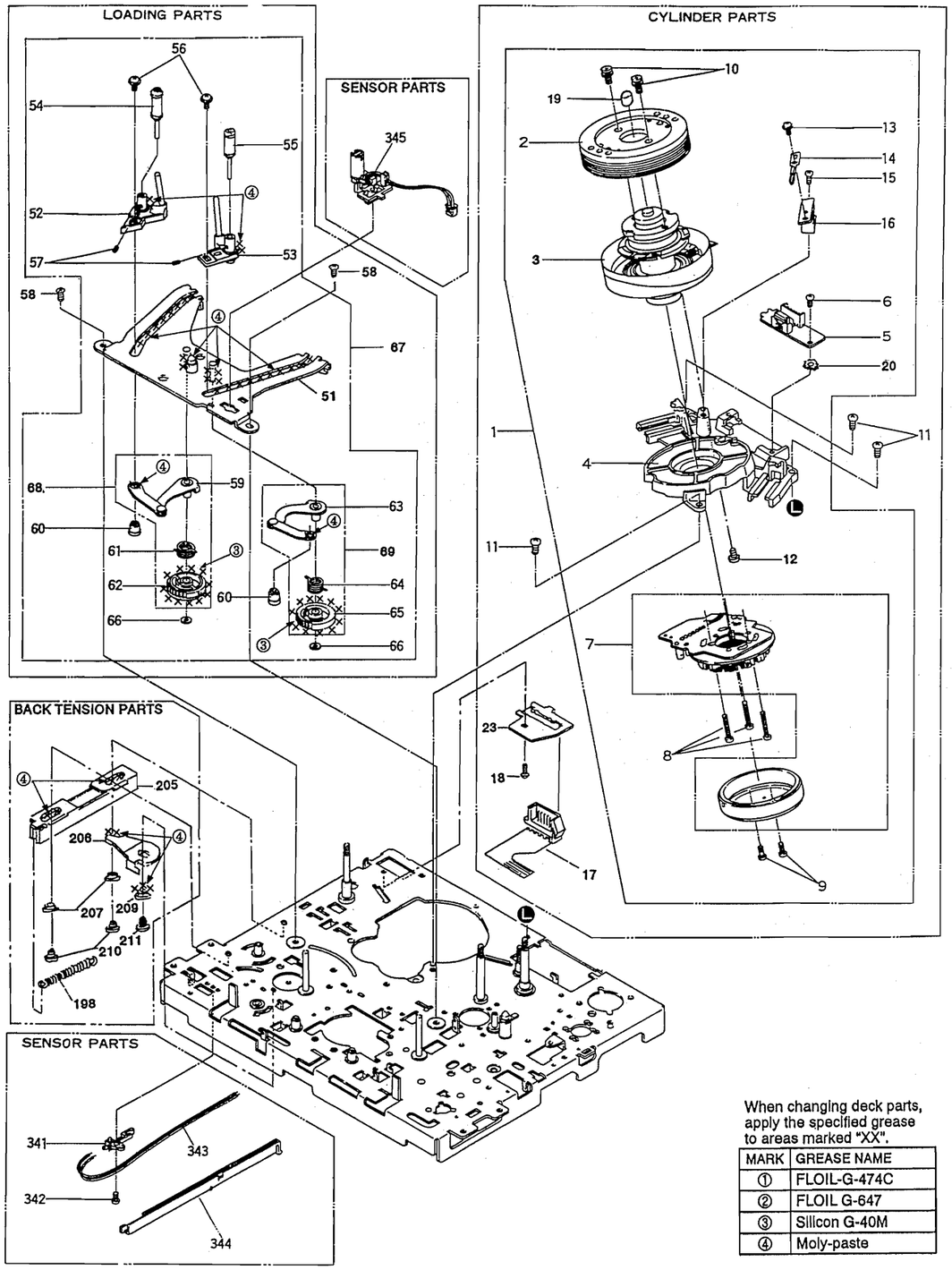
VCR CABINET EXPLODED VIEW

*(------- Marked Parts See the Electronics Parts List)



DECK 1 EXPLODED VIEW

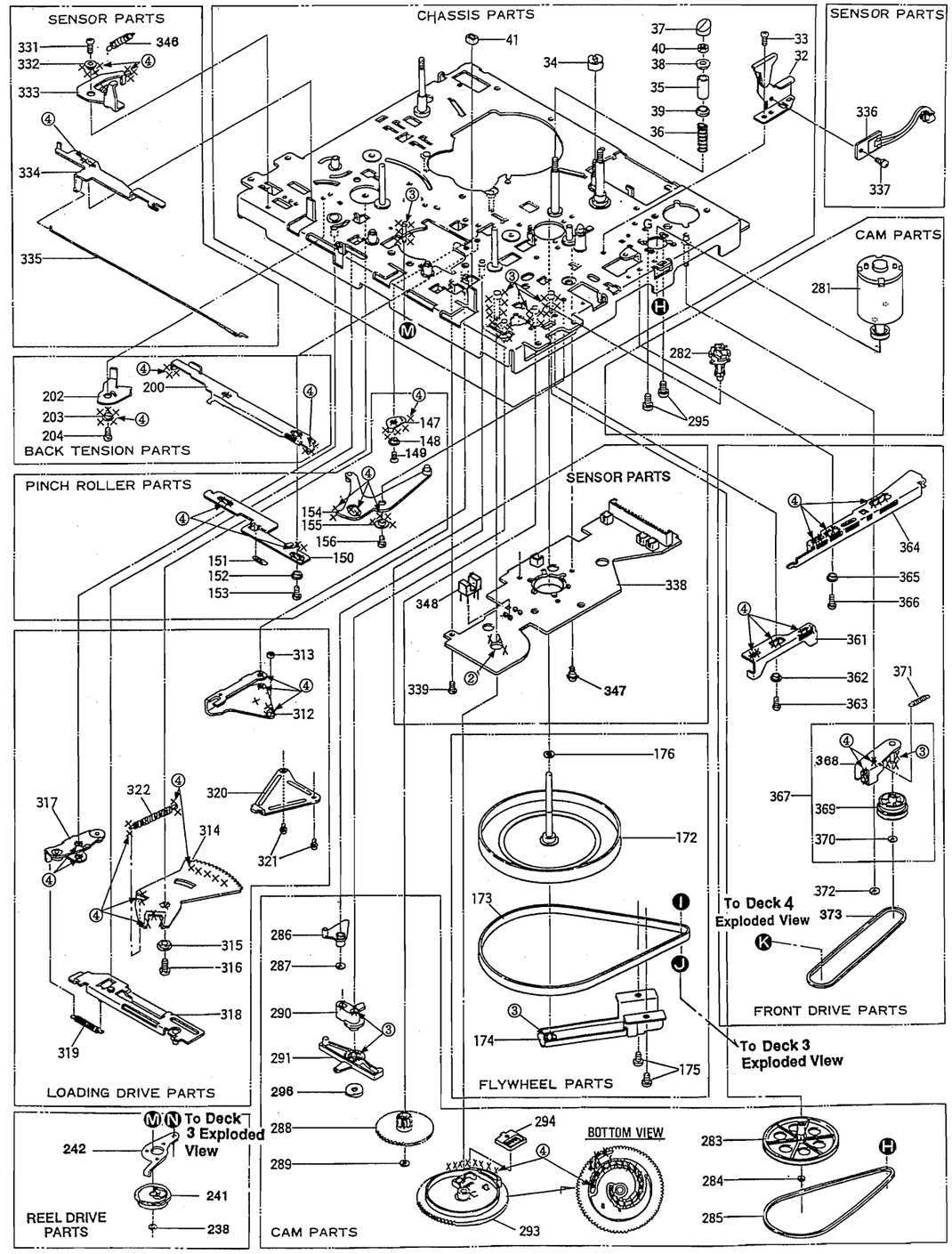
Note:
Letters are used to show installation location for some parts. (Ex; J located at Capstan 171 mounted position and J' is placement of belt on Capstan pulley).



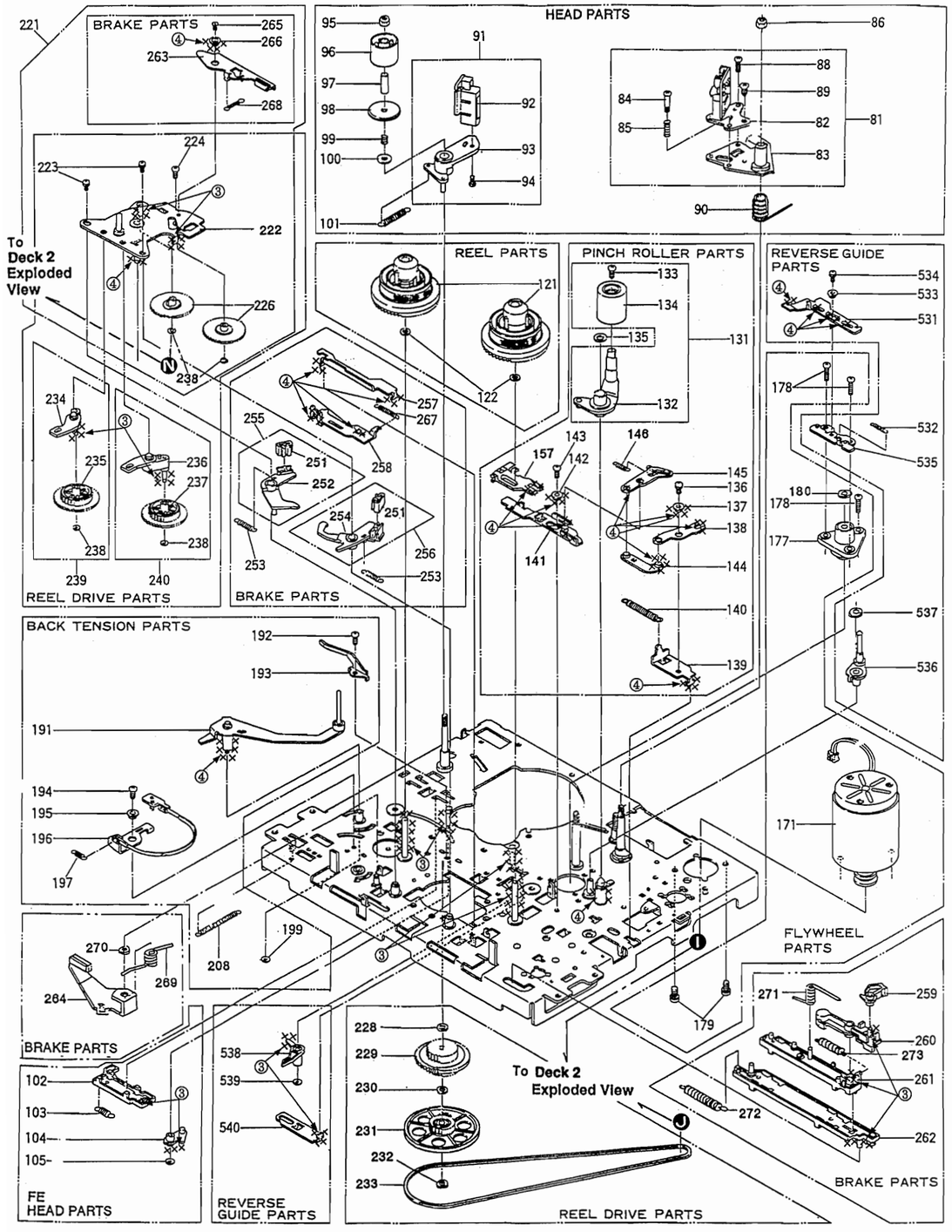
When changing deck parts, apply the specified grease to areas marked "XX".

MARK	GREASE NAME
①	FLOIL-G-474C
②	FLOIL G-647
③	Silicon G-40M
④	Moly-paste

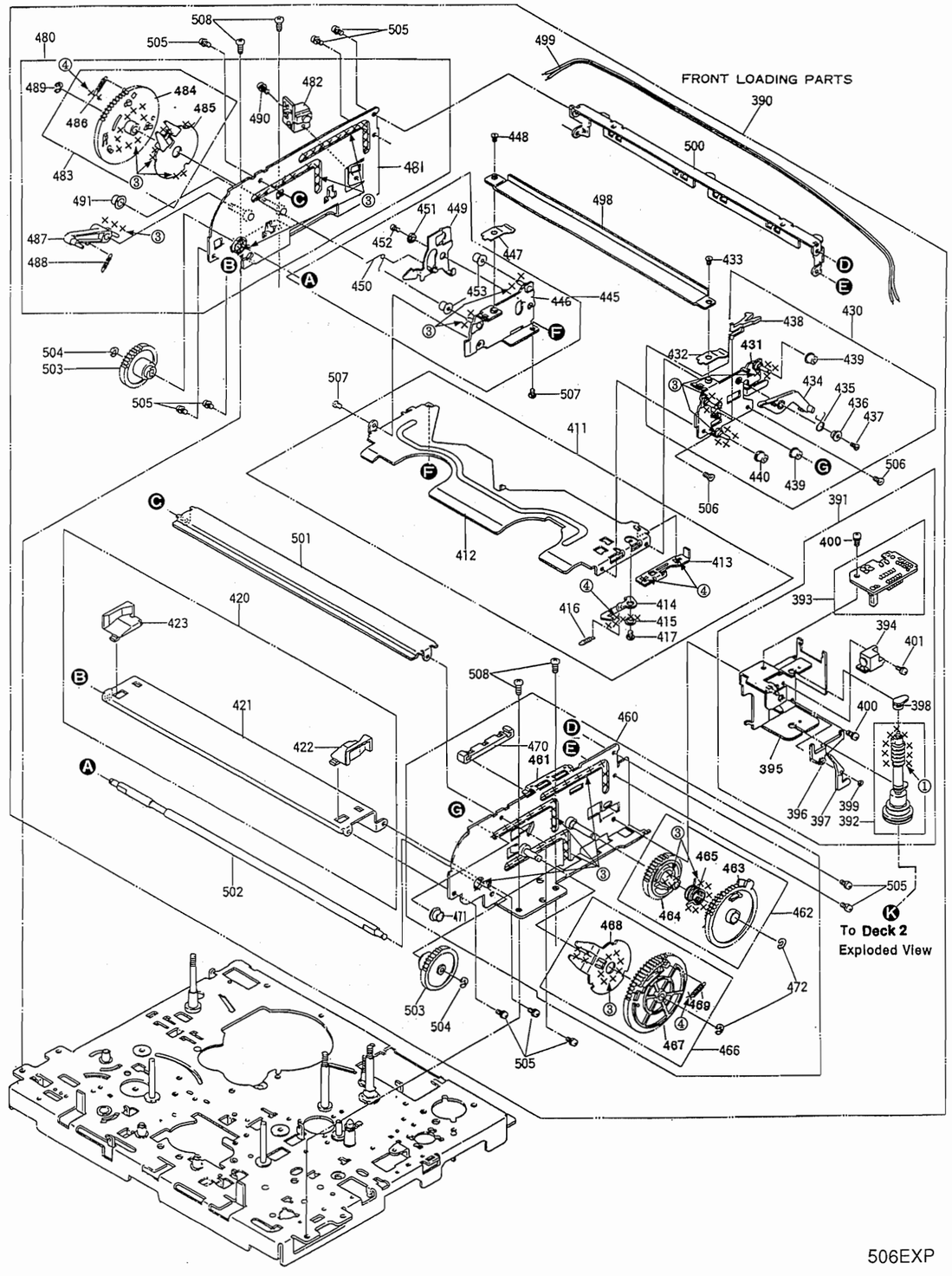
DECK 2 EXPLODED VIEW



DECK 3 EXPLODED VIEW

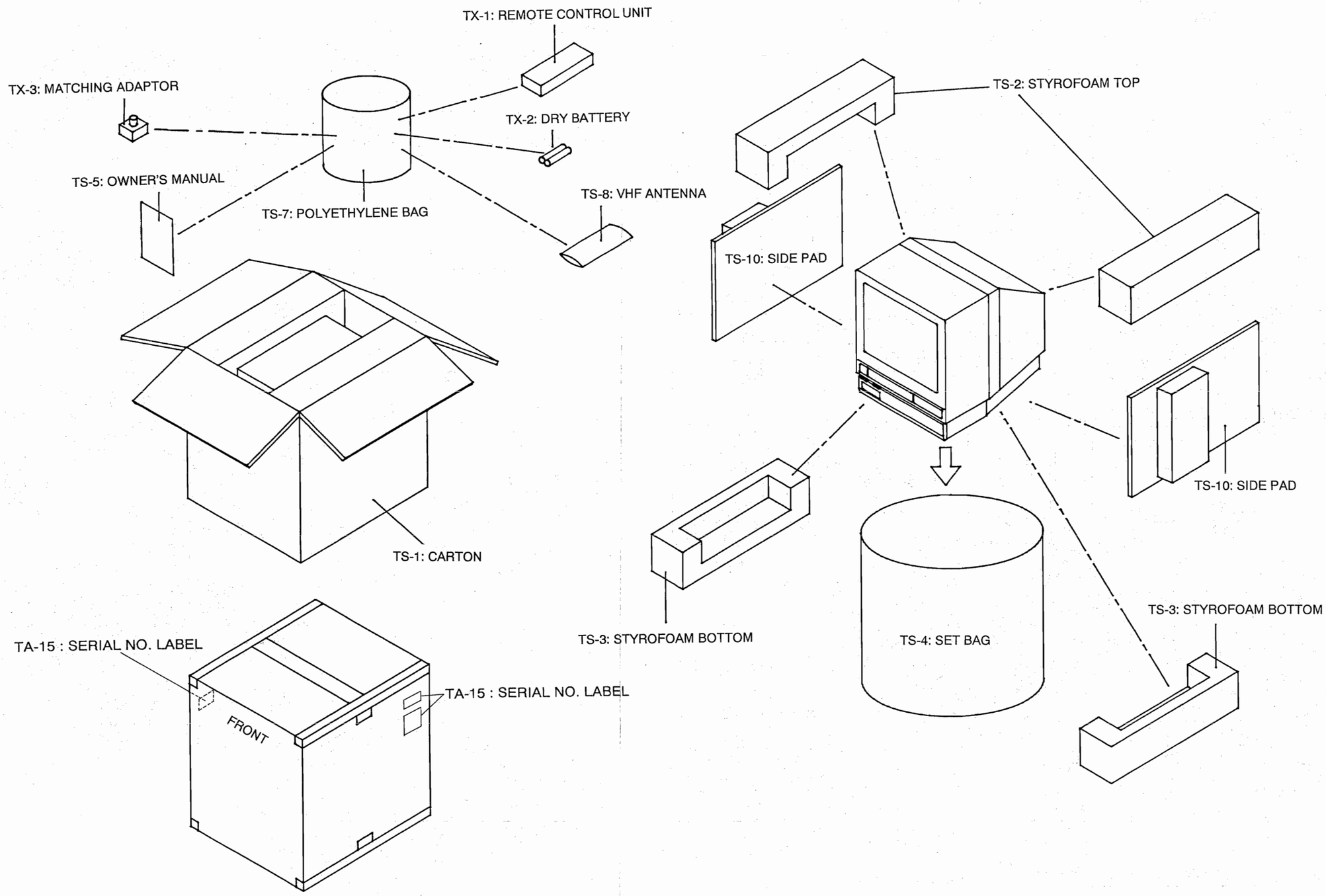


DECK 4 EXPLODED VIEW



506EXP

PACKING EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST (CABINET)

Conparison chart of Models & Marks.

TYPE	MODEL
A	13TVCRMKIII
B	TVCR13FIII

Ref.	Type	Description	Parts No.
TA-1	A,B	FRONT CABINET	OEM100031
TA-2	A,B	MOUNTING BOSS A	OEM400077
TA-3	A,B	REAR CABINET	OEM100032
TA-4	A	CONTROL DOOR	OEM300056
TA-4	B	CONTROL DOOR	OEM300057
TA-5	A,B	TIMER WINDOW	OEM400079
TA-6	A,B	POWER KNOB	OEM400164
TA-7	A,B	S/E KNOB	OEM400095
TA-8	A,B	PLATE A	OEM400082
TA-9	A	PLATE B	OEM400162
TA-10	A,B	CONTROL PLATE	OEM300050
TA-11	A,B	CASSETTE DOOR	OEM300022
TA-12	A,B	LATCH	6D51218
TA-14	A	RATING LABEL	OEM400186
TA-14	B	RATING LABEL	OEM400190
TA-15	A,B	SERIAL NO. LABEL	OEM400328
TA-16	A,B	COVER PLATE	OEM400096
TA-17	A,B	USER CAUTION LABEL	24LH008
TA-18	A,B	TIMER PLATE	OEM400161
TA-19	A,B	CAUTION PLATE	24LH050
TA-20	A,B	MFG LABEL	24LH157
TB-1	A,B	PCB HOLDER	OEM100033
TB-2	A,B	TENSION SPRING	26WH006
TB-3	A,B	CRT MOUNTING SCREW	8A00083
TB-4	A,B	CRT SPACER A	23WE079
TB-5	A,B	DOOR SPRING	OEM400105
TB-6	A,B	DOOR CUSHION	OEM400106
TB-7	A,B	CLOTH	24WE420
TB-8	A,B	SERVICEMAN WARNING LABEL	OEM400255
TB-9	A,B	CUSHION B	OEM400129
TB-10	A,B	ANODE LEAD LABEL	24LH014
TL-1	A,B	P-TIGHT SCREW M3X8	GLMP3080
TL-2	A,B	S-TIGHT SCREW M3X8	GFMS3080
TL-3	A,B	B-TIGHT SCREW M3X8	GBMB3080
TL-4	A,B	B-TIGHT SCREW M3X16	GBMB3160
TL-5	A,B	TAPPING SCREW M4X14	DBM14140
TL-6	A,B	P-TIGHT SCREW M3X8	GPMP3080
TL-7	A,B	P-TIGHT SCREW M3.5X12	GPKPT120
TL-8	A,B	P-TIGHT SCREW M4X18	GBKP4180
TL-9	A,B	WASHER 3.2X10X1.0T	WPM3101
TX-1	A,B	REMOTE CONTROL UNIT	UREMT22MS004
TX-2	A,B	DRY BATTERY	1790741 or
			1790902
TX-3	A,B	MATCHING ADAPTOR	1813641 or
			1780103 or
			1780258

MECANICAL REPLACEMENT PARTS LIST (CABINET)

Ref.No.	Type	Description	Parts No.
TS-1	A	CARTON	OEM400188
TS-1	B	CARTON	OEM400189
TS-2	A,B	STYROFORM TOP	OEM100022
TS-3	A,B	STYROFORM BOTTOM	OEM100023
TS-4	A,B	SET BAG	32EH037
TS-5	A	OWNER'S MANUAL	OEMN00046
TS-5	B	OWNER'S MANUAL	OEMN00048
TS-6	A,B	POLYETHYLENE BAG	Z310150
TS-7	A,B	POLYETHYLENE BAG	Z325350
TS-8	A,B	VHF ANTENNA	27AH006 or
			27AH008
TS-10	A,B	SIDE PAD	32FH058
TS-13	A	UPC CORD LABEL	OEM400366
TS-13	B	UPC CORD LABEL	OEM400390

VCR CABINET PARTS LIST

Ref.No.	⚠	Description	Q'ty	ID No.
		Front Ass'y (TV Section)		
A-1	⚠	Label, Chassis No.	1	OVM401904
B1-1		Deck Ass'y (See Deck List)	1	OVDK00075
B2-1		Panel, Top	1	OVM200555
B2-9		Chassis	1	OVM200336
B2-11		Plate, Shield	1	OVM401143
L2-02		Screw, P-tight, Brazier, Flange, M3X10	3	GCMP3100
L2-06		Screw, P-tight, Bind Head, M4X10	2	GBMP4100
L2-017		Screw, P-tight, Bind Head, M3X10	2	GBMP3120
L2-018		Screw, P-tight, Bind Head, M3X10	1	GBMP3120
L2-019		Screw, P-tight, Bind Head, M3X10	2	GBMP3120
L2-H01		Screw, Sems, Pan Head, M3X5	2	CPM33050

DECK REPLACEMENT PARTS LIST

NOTE: Items 14 and 19 must be replaced together.

Ref.	Drawing No.	Description	Q'ty	Parts No.
1	1	Cylinder Assembly	1	8059-82-40A
2	1	Drum, Upper	1	8059-01-18
3	1	Drum Assembly, Lower	1	8059-01-304
4	1	Mount, Cylinder	1	8059-01-01
5	1	P.C.B. Assembly, Video Out	1	8059-01-305
6	1	Screw, W Sems, M2.6 x 6	1	9973-00-00
7	1	Motor TM84	1	6004-09-01
8	1	Screw, C-tight, M2.6 x 20	3	9055-00-00
9	1	Screw, Sems, M2.6 x 6	2	9098-00-00
10	1	Screw, Bind Sems, M3 x 8	2	9972-00-00
11	1	Screw, C-tight, M3 x 10	3	9205-00-00
12	1	Screw, B-tight M2 x 6	1	9999-18-18
13	1	Screw, Cap, M2.6 x3	1	9665-00-00
14	1	Flat Spring Ground, Drum	1	8059-01-54
15	1	Screw, C-tight, M2.6 x 5	1	9192-00-00
16	1	Bracket, Drum Ground	1	8059-01-02
17	1	DM C.B.A.	1	8059-01-347
18	1	Screw, C-tight, M2.6 x 5	1	9192-00-00
19	1	Drum Ground	1	8059-01-23
20	1	Washer, Toothed Lock, M2.6	1	9715-00-00
23	1	Connector Bracket	1	8059-01-71
32	2	Open Angle	1	8059-02-301
33	2	Screw, C-tight, M2.6 x 4	1	9191-00-00
34	2	Adjuster, Tracking	1	8059-02-29
35	2	Guide, Tape	1	8000-03-14
36	2	Spring, Tape Guide	1	8059-02-26
37	2	Cap, Guide	1	8000-03-19
38	2	Flange (C), Tape Guide	1	8000-03-28
39	2	Flange (D), Tape Guide	1	8000-03-29
40	2	Nut M3.0	1	9453-00-00
41	2	Rubber, Damper	1	8059-02-23
51	1	Loading Base	1	8059-03-501
52	1	Block (L), Loading	1	8059-03-04
53	1	Block (R), Loading	1	8059-03-05
54	1	Roller Post ST	1	8000-03-37
55	1	Roller Post ST	1	8000-03-37
56	1	Screw, Cup, M2.6 x 3	2	9665-00-00
57	1	Screw, Set, M2.0 x 3 (Plane Type)	2	9550-00-00
58	1	Screw, C-tight, M2.6 x 5	2	9192-00-00
59	1	Plate (L), Loading	1	8059-03-502
60	1	Boss, Loading	2	8059-03-14
61	1	Spring (L), Loading Gear	1	8059-03-08
62	1	Gear (L), T Loading	1	8059-03-06
63	1	Plate (R), Loading	1	8059-03-503
64	1	Spring (R), Loading Gear	1	8059-03-09
65	1	Gear (R), T Loading	1	8059-03-07
66	1	Washer, Polyslider 2.6 x 6 x 0.5	2	9884-00-00
67	1	Loading Base Assembly	1	8059-03-301
68	1	Loading Gear (L) Assembly	1	8059-03-302
69	1	Loading Gear (R) Assembly	1	8059-03-303
81	3	Head Base Assembly	1	8059-04-308
82	3	Head, ACE	1	6204-15-06
83	3	Base, Head	1	8059-04-502
84	3	Screw, Azimuth Spring	1	8000-06-26

DECK REPLACEMENT PARTS LIST (Continued)

Ref.	Drawing No.	Description	Q'ty	Parts No.
85	3	Spring, Azimuth	1	8000-06-04
86	3	Nut, Nylon M3	1	9953-00-00
88	3	Screw, M2.6 x 7	1	9705-00-00
89	3	Screw, Set, M3 x 6	1	9999-20-25
90	3	Spring, Head	1	8059-04-15
91	3	Plate Assembly, Full Erase	1	8059-04-302
92	3	Head, Full Erase	1	6204-15-03
93	3	Plate, Full Erase	1	8059-04-04
94	3	Screw, Flange Bind, M2 x 3	1	9114-00-00
95	3	Nut, Nylon M3	1	9953-00-00
96	3	Roller, Impedance	1	8059-04-05
97	3	Sleeve, Impedance Roller	1	8059-04-06
98	3	Flange (A), Tape Guide	1	8059-04-07
99	3	Spring, Tape Guide Flange	1	8059-04-09
100	3	Washer, Plane ϕ3 x ϕ8 x t0.5	1	9337-00-00
101	3	Spring, FE Plate	1	8059-04-08
102	3	Plate, FE Slide	1	8059-04-10
103	3	Spring, FE Actuate	1	8059-04-12
104	3	Lever, FE Actuate	1	8059-04-11
105	3	Washer, Polyslider ϕ2.1 x ϕ5 x t0.5	1	9876-00-00
121	3	Reel Assembly	2	8059-05-301
122	3	Washer, ϕ3.1 x ϕ6 x t0.5	2	9912-00-00
131	3	Arm Assembly, Pinch Roller	1	8059-06-301
132	3	Arm, Pinch Roller	1	8059-06-501
133	3	Screw, M2.6 x 4	1	9038-00-00
134	3	Roller (A), Pinch	1	8000-09-22
135	3	Washer, Polyslider, ϕ5 x ϕ8 x t0.5	1	9999-03-11
136	3	Screw, Sems, M2.6 x 4	1	9096-00-00
137	3	Collar	1	8059-06-18
138	3	Angle, P Actuate	1	8059-06-05
139	3	Holder, P Angle	1	8059-06-19
140	3	Spring, P Roller	1	8059-06-20
141	3	Plate (A), P Slide	1	8059-06-24
142	3	Collar	1	8059-06-18
143	3	Screw, C-tight, M2.6 x 5	1	9192-00-00
144	3	Joint Plate	1	8059-06-06
145	3	Arm, P Actuate	1	8059-06-04
146	3	Spring, P Actuate Arm	1	8059-06-09
147	2	Crank, P	1	8059-06-12
148	2	Collar, P Crank	1	8059-06-13
149	2	Screw, C-tight FH (For Camera), M2.6 x 4	1	9999-18-10
150	2	Slider, P	1	8059-06-10
151	2	Spring, P Slider	1	8059-06-23
152	2	Collar, P Slider	1	8059-06-11
153	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
154	2	Lever, P Cam	1	8059-06-502
155	2	Collar, P Cam Lever	1	8059-06-17
156	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
157	3	Plate (B), P Slide	1	8059-06-25
171	3	Motor Assembly, Capstan	1	8059-07-302
172	2	Capstan, Flywheel	1	8059-07-14
173	2	Belt, Main	1	8059-07-10
174	2	Angle Assembly, Flywheel	1	8059-07-303
175	2	Screw, C-tight, M3 x 5	2	9202-00-00
176	2	Washer, ϕ3.1 x ϕ6 x t0.5	1	9912-00-00

DECK REPLACEMENT PARTS LIST (Continued)

Ref.	Drawing No.	Description	Q'ty	Parts No.
177	3	Housing Assembly, Metal	1	8059-07-301
178	3	Screw, C-tight, M2.6 x 8	3	9195-00-00
179	3	Screw, Sems, M3 x 4	2	9105-00-00
180	3	Nylon Washer ϕ2.92 x ϕ5 x t0.5	1	9999-06-03
191	3	Arm, Back Tension	1	8059-08-501
192	3	Screw, C-tight, M2.6 x 4	1	9191-00-00
193	3	Support, Back Tension	1	8059-08-09
194	3	Screw, C-tight, M2.6 x 4	1	9191-00-00
195	3	Collar, Band Holder	1	8059-08-15
196	3	Band, BT	1	8059-08-302
197	3	Spring, Band Holder	1	8059-08-17
198	1	Spring, Back Tension	1	8059-08-13
199	3	Washer, Polyslider, ϕ2.1 x ϕ4 x t0.5	1	9999-03-15
200	2	Plate, BT Change	1	8059-08-10
202	2	Lever, BT Return	1	8059-08-23
203	2	Collar	1	8059-06-18
204	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
205	1	Plate, BT Actuate	1	8059-08-19
206	1	Lever, BT Actuate	1	8059-08-18
207	1	Collar, BT Actuate Plate	2	8059-08-21
208	3	Spring, BT Actuate Plate	1	8059-08-20
209	1	Collar	1	8059-06-18
210	1	Screw, S-tight (For Camera) M2.6 x 3.5	2	9840-00-00
211	1	Screw, C-tight M2.6 x 5	1	9192-00-00
221	3	Plate Assembly	1	8059-09-312
222	3	Plate Semi Assembly	1	8059-09-503
223	3	Screw, Sems, M2 x 4	2	9077-00-00
224	3	Screw, C-tight, M2.6 x 4	1	9192-00-00
226	3	Gear, Reel Drive	2	8059-09-06A
228	3	Washer, Nylon, ϕ3.1 x ϕ6 x t0.3	1	9853-00-00
229	3	Clutch Assembly	1	8059-09-311
230	3	Washer, Nylon, ϕ2.98 x ϕ6 x t0.3	1	9999-06-04
231	3	Pulley Assembly, Middle	1	8059-09-301
232	3	Washer, Polyslider, ϕ2.6 x ϕ6 x t0.5	1	9884-00-00
233	3	Belt, Drive	1	8059-09-17
234	3	Arm Assembly, P Gear	1	8059-09-303
235	3	Gear, Play	1	8059-09-20A
236	3	Arm Assembly, RF Gear	1	8059-09-304
237	3	Gear, FF	1	8059-09-22A
238	2,3	Washer, Polyslider, ϕ1.6 x ϕ3.8 x t0.3	5	9743-00-00
239	3	Gear Assembly, P	1	8059-09-314
240	3	Gear Assembly, RF	1	8059-09-315
241	2	Return Gear Assembly	1	8059-09-313
242	2	Retrun Arm	1	8059-09-53
251	3	Shoe, Brake	2	8059-10-19
252	3	Arm, S Brake	1	8059-10-01
253	3	Spring, Brake Arm	2	8059-10-02
254	3	Arm, T Brake	1	8059-10-03
255	3	Arm Assembly, S Brake	1	8059-10-301
256	3	Arm Assembly, T Brake	1	8059-10-302
257	3	Lifter, Brake	1	8059-10-16
258	3	Actuator, L Brake	1	8059-10-17
259	3	Hook, Trigger	1	8059-10-14
260	3	Lever, Trigger	1	8059-10-13
261	3	Plate, Brake	1	8059-10-11

DECK REPLACEMENT PARTS LIST (Continued)

Ref.	Drawing No.	Description	Q'ty	Parts No.
262	3	Brake Actuate, Base	1	8059-10-09
263	3	Brake, Take-up soft	1	8059-10-303
264	3	Brake, S Soft	1	8059-10-304
265	3	Screw, SL FH (For Camera), M2 x 3	1	9974-00-00
266	3	Collar, Take-up Soft Brake Arm	1	8059-10-07
267	3	Spring, L Brake Actuator	1	8059-10-18
268	3	Spring, Take-up Soft Brake Arm	1	8059-10-06
269	3	Spring, S Soft Brake	1	8059-10-22
270	3	Washer, Polyslider, ϕ2.1 x ϕ5 x t0.5	1	9876-00-00
271	3	Spring, Trigger Lever	1	8059-10-23
272	3	Brake Actuate Base Spring	1	8059-10-10
273	3	Brake Plate Spring	1	8059-10-12
281	2	LM Assembly	1	8059-11-301
282	2	Bearing Assembly, Trigger	1	8059-11-302
283	2	Pulley, Loading	1	8059-11-03
284	2	Washer, Polyslider, ϕ1.6 x ϕ3.8 x t0.3	1	9743-00-00
285	2	Belt, Loading	1	8059-11-06
286	2	Arm (B), Search	1	8059-11-12
287	2	Washer, Polyslider, ϕ2.6 x ϕ6 x t0.5	1	9884-00-00
288	2	Gear, Loading	1	8059-11-04
289	2	Washer, Polyslider, ϕ2.1 x ϕ5 x t0.5	1	9876-00-00
290	2	Arm, Brake Actuate	1	8059-11-13
291	2	Arm, Eject Actuate	1	8059-11-14
293	2	Cam, Loading	1	8059-11-01
294	2	Brush, S	1	8059-11-02
295	2	Screw, C-tight, M3 x 4	2	9105-00-00
296	2	Washer, Polyslider, ϕ2.6 x ϕ8 x t 0.5	1	9999-03-10
312	2	Lever Semi Assembly, Loading	1	8059-12-501
313	2	Roller, Cam	1	8059-12-13
314	2	Plate, Loading Gear	1	8059-12-09
315	2	Collar, Loading Gear Plate	1	8059-12-10
316	2	Screw, C-tight, M3 x 6	1	9203-00-00
317	2	Lever Semi Assembly, Loading Actuate	1	8059-12-502
318	2	Plate, Semi Assembly, Loading Actuate	1	8059-12-503
319	2	Spring, Loading Actuate	1	8059-12-05
320	2	Plate, Loading Lever Reinforce	1	8059-12-11
321	2	Screw, Sems, M2 x 5	2	9078-00-00
322	2	Spring, L Gear Plate	1	8059-12-12
331	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
332	2	Collar	1	8059-06-18
333	2	Lever, REC	1	8059-13-06
334	2	Actuator, REC	1	8059-13-07
335	2	Spoke, REC Actuate	1	8059-13-11
336	2	Sensor, DEW	1	6808-08-04
337	2	Screw, Sems, M2.6 x 4	1	9096-00-00
338	2	Base C.B.A.	1	8059-13-307
339	2	Screw, S-tight (For Camera), M2.6 x 5	1	9691-00-00
341	1	Switch, Leaf	1	6401-01-151
342	1	Screw, C-Tight, M2.6 x 5	1	9192-00-00
343	1	Wire	2	8059-13-08
344	1	Holder, Wire	1	8059-13-10
345	1	Lamp C.B.A.	1	8059-13-306
346	2	Spring, Rec Lever	1	8059-13-14
347	2	Collar, Screw	1	8059-13-17
348	2	Reel Sensor	1	6808-08-03

DECK REPLACEMENT PARTS LIST (Continued)

Ref.	Drawing No.	Description	Q'ty	Parts No.
361	2	Actuator, Eject	1	8059-15-08
362	2	Collar	1	8059-06-18
363	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
364	2	Plate, L Brake	1	8059-15-07
365	2	Collar	1	8059-06-18
366	2	Screw, C-tight, M2.6 x 5	1	9192-00-00
367	2	Arm Assembly, E Idler	1	8059-15-303
368	2	Arm Semi Assembly, E Idler	1	8059-15-502
369	2	Pulley, Eject	1	8059-15-15
370	2	Washer, Polyslider, ϕ1.6 x ϕ3.8 x t0.3	1	9743-00-00
371	2	Spring, Idler Arm	1	8059-15-11
372	2	Washer, Polyslider, ϕ2.1 x ϕ6 x t0.5	1	9876-00-00
373	2	Belt, Front Loading	1	8059-15-06
390	4	Loading Assembly, Front	1	8059-16-337
391	4	Bracket Assembly, Cassette Load	1	8059-16-318
392	4	Clutch Assembly, Front Loading	1	8059-16-319
393	4	Front Loading C.B.A.	1	8059-16-320
394	4	Start Sensor C.B.A.	1	8059-16-316
395	4	Bracket Semi Assembly, Cassette Load	1	8059-16-506
396	4	Lever, IN SW	1	8059-16-34
397	4	Lever, S SW	1	8059-16-33
398	4	Bearing (A), F Worm	1	8059-16-06
399	4	Washer, Polyslider, ϕ1.6 x ϕ3.8 x t0.3	1	9743-00-00
400	4	Screw, Sems, M2.6 x 4	2	9096-00-00
401	4	Screw, Sems, M2 x 5	1	9078-00-00
411	4	Holder Assembly, Cassette	1	8059-16-306
412	4	Holder, Cassette	1	8000-22-03
413	4	Plate, Slide	1	8000-22-13
414	4	Plate (A), C Lock	1	8000-22-12
415	4	Collar	1	8059-06-18
416	4	Spring, Lock	1	8059-16-29
417	4	Screw, SL (For Camera), M2.6 x 3	1	9968-00-00
420	4	Angle Assembly, Front	1	8059-16-307
421	4	Angle, Front	1	8059-16-18
422	4	Guide (R), Tape	1	8059-16-25
423	4	Guide (L), Tape	1	8059-16-24
430	4	Plate (R) Assembly, Side	1	8059-16-308
431	4	Plate (R), Side	1	8059-16-502
432	4	Plate, Cassette Push	1	8059-16-28
433	4	Screw (For Camera), M2.3 x 2	1	9833-00-00
434	4	Lever, Open	1	8000-22-25
435	4	Spring, Open Lever	1	8000-22-44
436	4	Lever Collar, Open	1	8000-22-42
437	4	Screw, SL (For Camera), M2 x 4	1	9967-00-00
438	4	Lever, Lock Release	1	8000-22-16
439	4	Roller, Guide	2	8000-22-75
440	4	Roller, Guide	1	8000-22-23
445	4	Plate (L) Assembly, Side	1	8059-16-309
446	4	Plate (L), Side	1	8059-16-503
447	4	Plate, Cassette Push	1	8059-16-28
448	4	Screw (For Camera), M2.3 x 2	1	9833-00-00
449	4	Plate (L), C Lock	1	8000-22-66
450	4	Spring (L), Lock Plate	1	8059-16-30
451	4	Collar, Lock Plate	1	8000-19-63
452	4	Screw (For Camera), M2 x 2.5	1	9966-00-00

DECK REPLACEMENT PARTS LIST

Ref.	Drawing No.	Description	Q'ty	Parts No.
453	4	Roller, Guide	2	8000-22-75
460	4	Frame (R) Assembly	1	8059-16-339
461	4	Frame (R)	1	8059-16-507
462	4	Wheel Assembly, Worm	1	8059-16-321
463	4	Wheel, Worm	1	8059-16-36
464	4	Gear, Friction	1	8059-16-45
465	4	Spring, Friction	1	8059-16-31
466	4	Gear (R) Assembly, Lift	1	8059-16-312
467	4	Gear (R), Lift	1	8000-22-15
468	4	Arm, Lift	1	8000-22-11
469	4	Spring, LP	1	8000-22-45
470	4	Guide, Open Lever	1	8000-22-26
471	4	Sleeve, Guide	1	8000-22-24
472	4	E Ring S 2.5	2	9504-00-00
480	4	Frame (L) Assembly	1	8059-16-338
481	4	Frame (L)	1	8059-16-508
482	4	End Sensor C.B.A.	1	8059-16-301
483	4	Gear (L) Assembly, Lift	1	8059-16-314
484	4	Gear, Lift	1	8000-22-14
485	4	Arm, Lift	1	8000-22-11
486	4	Spring, LP	1	8000-22-45
487	4	Lever, Lift	1	8059-16-67
488	4	Spring, Lift Lever	1	8059-16-68
489	4	E-Ring S 2.5	1	9504-00-00
490	4	Screw, Sems, M2.6 x 7	1	9099-00-00
491	4	Sleeve, Guide	1	8000-22-24
498	4	Stay, Top	1	8000-22-65
499	4	Wire, End Sensor	1	8059-16-19
500	4	Angle, Rear	1	8059-16-09
501	4	Plate, Upper	1	8059-16-66
502	4	Shaft, Synchronize	1	8059-16-60
503	4	Gear (A), Synchronize	2	8059-16-17
504	4	E-Ring S 2.5	2	9504-00-00
505	4	Screw, Sems, M2.6 x 4	10	9096-00-00
506	4	Screw (For Camera), M2.6 x 3	2	9556-00-00
507	4	Screw (For Camera), M2.3 x 2.5	2	9991-00-00
508	4	Screw, C-Tight, M2.6 x 5	4	9192-00-00
531	3	Plate, RG Slide	1	8059-17-03
532	3	Spring, RG Slide	1	8059-17-11
533	3	Collar, RG Slide Plate	1	8059-17-10
534	3	Screw, Sems, M2 x 4	1	9077-00-00
535	3	Base, RG Slide	1	8059-17-09
536	3	Arm Semi Assembly, RG	1	8059-17-502
537	3	Washer, Polyslider, ϕ2.6 x ϕ6 x t0.5	1	9884-00-00
538	3	Arm, RG Actuate	1	8059-17-01
539	3	Washer, Polyslider, ϕ2.1 x ϕ5 x t0.5	1	9876-00-00
540	3	RG Actuator	1	8059-17-02

ELECTRICAL REPLACEMENT PARTS LIST [TV]

MAIN C.B.A. BB8200001-1X
CRT C.B.A. BB8200001-2X
CONTROL C.B.A. BB8200002-1X
EARPHONE C.B.A. BB8200002-2X

PRINTED CIRCUIT BOARD ASSEMBLY PARTS LIST
NOTE: Parts marked with a ⚠ have special characteristics important to safety. Before replacing any of these components read carefully the product safety notice of the Service Manual .
Don't degrade the safety of the product through improper servicing.

Ref.	⚠	Description	Parts No.
		MAIN C.B.A.	
		ICS	
IC 1		IC, LA7620	14LQ164
IC 2	⚠	IC, LA7830	14LQ163
IC 3	⚠	IC, VOLTAGE REGULATOR AN78M12	AN78M12
		IC, VOLTAGE REGULATOR AN78M12	AN78M12F
		IC, VOLTAGE REGULATOR AN78M12	14L0242
IC 101	⚠	IC, TLP 651 (VIDEO)	GTLP651VIDEO
IC 201	⚠	IC, STK 5633F	14LQ349
		TRANSISTORS	
Q1		TRANSISTOR 2SA1318 (T)	A1318
Q4	⚠	TRANSISTOR 2SC2271 (D)	C2271D
Q5		TRANSISTOR 2SD1397	D1397-CA
Q101		TRANSISTOR 2SC1815 (GR) or	C1815GR
		TRANSISTOR 2SC3331 (T, U) or	C3331T, U
		TRANSISTOR 2SC828A (S)	C828AS
Q102		TRANSISTOR 2SC1815 (GR) or	C1815GR
		TRANSISTOR 2SC3331 (T, U) or	C3331T, U
		TRANSISTOR 2SC828A (S)	C828AS
Q103		TRANSISTOR 2SC1815 (GR) or	C1815GR
		TRANSISTOR 2SC3331 (T, U) or	C3331T, U
		TRANSISTOR 2SC828A (S)	C828AS
		DIODES	
D1		DIODE GP104003EG16	GP104003EG16
D2		DIODE 1SS130 or	1SS130
		DIODE 1SS131	1SS131
D3		DIODE 1SS133 or	1SS133
		DIODE 1SS176	1SS176
D4	⚠	ZENER DIODE MTZ9.1B	MTZ9.1B
D5	⚠	ZENER DIODE MTZ20B	MTZ20B
D7	⚠	DIODE RGP15KL-5001	RGP15KL-5001
D8		DIODE RGP10K5004L	RGP10K5004L
D9	⚠	DIODE RGP15KL-5001	RGP15KL-5001
D10	⚠	DIODE RGP15KL-5001	RGP15KL-5001
D11		DIODE UZ-5.1B or	UZ-5.1B
		DIODE MTZ5.1B	MTZ5.1B
D101		DIODE 1SS133	1SS133
		DIODE 1SS176	1SS176
D203		DIODE GP15ML-5014	GP15ML-5014
D204		DIODE GP15ML-5014	GP15ML-5014
D205		DIODE GP15ML-5014	GP15ML-5014
D206		DIODE GP15ML-5014	GP15ML-5014

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
		CAPASITORS	
C1		MYLAR CAP. 0.0012 uF/50V ±10%	1250122
			2250122
C2		CERAMIC CAP. 47PF/50V ±5%	3270470
C3		MYLAR CAP. 0.022uF/50V ±10%	1250223
			2250223
C4		MYLAR CAP. 0.001uF/50V ±10%	1250102
			2250102
C5		ELECTROLYTIC CAP. 100uF/35V ±20%	626E107
C7		TANTAL CAP. 1uF/25V ±20%	1210105
C8		ELECTROLYTIC CAP. 2.2uF/50V ±20%	126F225
C9		ELECTROLYTIC CAP. 1000uF/25V ±20%	626D108
C10		MYLAR CAP. 0.12uF/100V	1251124
			2251124
C11	⚠	POLYPROPYLENE CAP 0.22uF/200V	122Z253
			1220507
		POLYPROPYLENE CAP 0.27uF/200V	122Z254
			1220508
C12		CERAMIC CAP. 0.01uF/50V +80/-20%	32F3103
			3F45103
C13		CERAMIC CAP. 22PF/50V ±5%	3270220
			3S41220
C14		CERAMIC CAP. 22PF/50V ±5%	3270220
			3S41220
C15		CERAMIC CAP. 0.01uF/50V +80/-20%	32F3103
			3F45103
C16		ELECTROLYTIC CAP. 10uF/16V ±20%	126C106
C17		ELECTROLYTIC CAP. 10uF/16V ±20%	126C106
C18		ELECTROLYTIC CAP. 0.47uF/50V ±20%	126F474
C19		ELECTROLYTIC CAP. 0.47uF/50V ±20%	126F474
C20		CERAMIC CAP. 390PF/50V ±10%	32B3391
			3B42391
C21		CERAMIC CAP. 390PF/50V ±10%	32B3391
			3B42391
C22		CERAMIC CAP. 390PF/50V ±10%	32B3391
			3B42391
C23		SEMICONDUCTOR CAP. 0.1uF/25V ±10%	12Y2104
C24		SEMICONDUCTOR CAP. 0.1uF/25V ±10%	12Y2104
C25		CERAMIC CAP. 24PF/50V ±5%	32CH240
C26		SEMICONDUCTOR CAP. 0.015uF/25V ±10%	12Y2153
C27		ELECTROLYTIC CAP. 1uF/50V ±20%	126F105
C28		ELECTROLYTIC CAP. 1uF/50V ±20%	126F105
C29		CERAMIC CAP. 0.01uF/50V +80/-20%	32F3103
			3F45103
C30		ELECTROLYTIC CAP. 470uF/16V ±20%	626C477
C31		CERAMIC CAP. 100PF/50V	3270101
			3B42101
C32		ELECTROLYTIC CAP. 4.7uF/25V ±20%	126D475
C33		SEMICONDUCTOR CAP. 0.033uF/25V ±10%	12Y2333
C34		ELECTROLYTIC CAP. 2.2uF/50V ±20%	126F225
C35		MYLAR CAP. 0.047uF/50V ±10%	1250473
			2250473
C36		SEMICONDUCTOR CAP. 0.033uF/25V ±10%	12Y2333
C37		ELECTROLYTIC CAP. 22uF/16V ±20%	126C226
C38		CERAMIC CAP. 0.001uF/50V ±10%	32B3102
			3B42102

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
C39		CERAMIC CAP. 0.0047uF/25V ±10%	32B3472
			3X4C472
C40		SEMICONDUCTOR CAP. 0.056uF/25V ±10%	12Y2563
C41		MYLAR CAP. 0.0012uF/50V ±10%	1250122
			2250122
C42		ELECTROLYTIC CAP. 1uF/50V ±20%	126F105
C43		CERAMIC CAP. 470PF/50V ±10%	32B3471
			3B42471
C44		ELECTROLYTIC CAP. 4.7uF/25V ±20%	126D475
C45		ELECTROLYTIC CAP. 2.2uF/50V ±20%	126F225
C46		CERAMIC CAP. 0.01uF/50V +80/-20%	32F3103
			3F45103
C47		CERAMIC CAP. 150PF/50V ±5%	1270151
			3B42151
C48		CERAMIC CAP. 82PF/50V ±5%	3270820
			3B42820
C49		CERAMIC CAP. 82PF/50V ±5%	3270820
			3B42820
C50		CERAMIC CAP. 0.001uF/1KV	6220574
C51	⚠	POLYPROPYLENE CAP. 0.0039uF 1.6KV	122Z281
			1220495
C52	⚠	POLYPROPYLENE CAP. 0.0015uF 1.6KV	122Z277
			1220490
C53		ELECTROLYTIC CAP. 4.7uF/250V ±20%	122Z343
			1220600
C54		ELECTROLYTIC CAP. 4.7uF/250V ±20%	122Z343
			1220600
C55	⚠	ELECTROLYTIC CAP. 330uF/35V ±20%	626E337
C56	⚠	ELECTROLYTIC CAP. 100uF/25V ±20%	626D107
C57		ELECTROLYTIC CAP. 4.7uF/250V ±20%	122Z343
			1220600
C101		ELECTROLYTIC CAP. 100uF/25V ±20%	126D107
C102		ELECTROLYTIC CAP. 1000uF/16V ±20%	626C108
C103		CERAMIC CAP. 0.0022uF AC125V	122Z699
C104		CERAMIC CAP. 56PF/50V ±5%	3270560
			3S41560
C105		ELECTROLYTIC CAP. 47uF/16V ±20%	126C476
C106		CERAMIC CAP. 0.01uF/50V +80/-20%	32F3103
			3F45103
C203		CERAMIC CAP. 0.0047uF AC125V ±1%	6220353
C204		CERAMIC CAP. 0.0047uF AC125V ±1%	6220353
C205		CERAMIC CAP. 0.0047uF AC125V ±1%	6220353
C206		CERAMIC CAP. 0.0047uF AC125V ±1%	6220353
C207		ELECTROLYTIC CAP. 220uF/200V	1220616
			122Z081
			1220890
C208		ELECTROLYTIC CAP. 33uF/250V ±20%	122Z346
C209	⚠	ELECTROLYTIC CAP. 33uF/250V ±20%	122Z346
		RESISTORS	
R1		CARBON RES.33K ohm 1/6W ±5%	132A333
		CARBON RES.33K ohm 1/5W ±5%	1324333
		CARBON RES.56K ohm 1/6W ±5%	132A563
		CARBON RES.56K ohm 1/5W ±5%	1324563

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
R2		CARBON RES.470K ohm 1/6W ±5%	132A474
		CARBON RES.470K ohm 1/5W ±5%	1324474
		CARBON RES.330K ohm 1/6W ±5%	132A334
		CARBON RES.330K ohm 1/5W ±5%	1324334
R3		CARBON RES.2.7K ohm 1/6W ±5%	132A272
		CARBON RES.2.7K ohm 1/5W ±5%	1324272
		CARBON RES.3.9K ohm 1/6W ±5%	132A392
		CARBON RES.3.9K ohm 1/5W ±5%	1324392
R4		CARBON RES.1.8 ohm 1/6W ±5%	132A189
		CARBON RES.1.8 ohm 1/5W ±5%	1324189
R5		CARBON RES.1.8 ohm 1/6W ±5%	132A189
		CARBON RES.1.8 ohm 1/5W ±5%	1324189
R6		CARBON RES. 1.5K ohm 1/6W ±5%	132A152
		CARBON RES.1.5K ohm 1/5W ±5%	1324152
R7		CARBON RES.82K ohm 1/6W ±5%	132A823
		CARBON RES.82K ohm 1/5W ±5%	1345823
		CARBON RES.100K ohm 1/6W ±5%	132A104
		CARBON RES.100K ohm 1/5W ±5%	1324104
R8		METAL RES. 270 ohm 1W ±5%	534A271
R20		CARBON RES. 22K ohm 1/6W ±5%	132A223
		CARBON RES. 22K ohm 1/5W ±5%	1324223
R26		CARBON RES. 1K ohm 1/6W ±5%	132A102
		CARBON RES. 1K ohm 1/5W ±5%	1324102
R32		CARBON RES. 3.3K ohm 1/6W ±5%	132A332
		CARBON RES. 3.3K ohm 1/5W ±5%	1324332
R33		CARBON RES. 1.8K ohm 1/6W ±5%	132A182
		CARBON RES. 1.8K ohm 1/5W ±5%	1324182
R34		CARBON RES. 1.8K ohm 1/6W ±5%	132A182
		CARBON RES. 1.8K ohm 1/5W ±5%	1324182
R35		CARBON RES. 22K ohm 1/6W ±5%	132A223
		CARBON RES. 22K ohm 1/5W ±5%	1324223
R36		CARBON RES. 12K ohm 1/6W ±5%	132A123
		CARBON RES. 12K ohm 1/5W ±5%	1324123
R37		CARBON RES. 47K ohm 1/6W ±5%	132A473
		CARBON RES. 47K ohm 1/5W ±5%	1324473
R38		CARBON RES. 330K ohm 1/6W ±5%	132A334
		CARBON RES. 330K ohm 1/5W ±5%	1324334
R39		CARBON RES. 1K ohm 1/6W ±5%	132A102
		CARBON RES. 1K ohm 1/5W ±5%	1324102
R40		CARBON RES. 6.8K ohm 1/6W ±5%	132A682
		CARBON RES. 6.8K ohm 1/5W ±5%	1324682
R41		CARBON RES. 2.7K ohm 1/6W ±5%	132A272
		CARBON RES. 2.7K ohm 1/5W ±5%	1324272
R42		CARBON RES. 1K ohm 1/6W ±5%	132A102
		CARBON RES. 1K ohm 1/5W ±5%	1324102
R43		CARBON RES. 10K ohm 1/6W ±5%	132A103
		CARBON RES. 10K ohm 1/5W ±5%	1324103
R44		CARBON RES. 330 ohm 1/6W ±5%	132A331
		CARBON RES. 330 ohm 1/5W ±5%	1324331
R45		CARBON RES. 330 ohm 1/6W ±5%	132A331
		CARBON RES. 330 ohm 1/5W ±5%	1324331
R46		CARBON RES. 330 ohm 1/6W ±5%	132A331
		CARBON RES. 330 ohm 1/5W ±5%	1324331
R47		CARBON RES. 220K ohm 1/6W ±5%	132A224
		CARBON RES. 220K ohm 1/5W ±5%	1324224

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
R48		CARBON RES. 560K ohm 1/6W ±5%	132A564
		CARBON RES. 560K ohm 1/5W ±5%	1324564
R49		CARBON RES. 1.5K ohm 1/6W ±5%	132A152
		CARBON RES. 1.5K ohm 1/5W ±5%	1324152
R50		CARBON RES. 1K ohm 1/6W ±5%	132A102
		CARBON RES. 1K ohm 1/5W ±5%	1324102
R51	⚠	CARBON RES. 1.8K ohm 1/6W ±5%	132A182
		CARBON RES. 1.8K ohm 1/5W ±5%	1324182
R52	⚠	CARBON RES. 10K ohm 1/6W ±2%	1355103
		CARBON RES. 10K ohm 1/5W ±2%	1354103
R53	⚠	CARBON RES. 12K ohm 1/6W ±2%	1355123
		CARBON RES. 12K ohm 1/5W ±2%	1354123
R54	⚠	CARBON RES. 19K ohm 1/6W ±2%	1355193
		CARBON RES. 19K ohm 1/5W ±2%	1354193
R55	⚠	CARBON RES. 100K ohm 1/6W ±2%	1355104
		CARBON RES. 100K ohm 1/5W ±2%	1354104
R56		CARBON RES. 2.2K ohm 1/6W ±5%	132A222
		CARBON RES. 2.2K ohm 1/5W ±5%	1324222
R57		CARBON RES. 1K ohm 1/6W ±5%	132A102
		CARBON RES. 1K ohm 1/5W ±5%	1324102
R59		CARBON RES. 3.9K ohm 1/6W ±5%	132A392
		CARBON RES. 3.9K ohm 1/5W ±5%	1324392
R60	⚠	METAL RES. 12K ohm 3W ±5%	534C123
			1330674
R61		CARBON RES. 100 ohm 1/6W ±5%	132A101
		CARBON RES. 100 ohm 1/5W ±5%	1324101
R65		CARBON RES. 560K ohm 1/6W ±5%	132A564
		CARBON RES. 560K ohm 1/5W ±5%	1324564
R66		CARBON RES. 39K ohm 1/6W ±5%	132A393
		CARBON RES. 39K ohm 1/5W ±5%	1324393
R67		CARBON RES. 4.7K ohm 1/6W ±5%	132A472
		CARBON RES. 4.7K ohm 1/5W ±5%	1324472
R68		CARBON RES. 470K ohm 1/6W ±5%	132A474
		CARBON RES. 470K ohm 1/5W ±5%	1324474
R69		CARBON RES. 560K ohm 1/6W ±5%	132A561
		CARBON RES. 560K ohm 1/5W ±5%	1324561
R70		CARBON RES. 120 ohm 1/6W ±5%	132A121
		CARBON RES. 120 ohm 1/5W ±5%	1324121
R71		CARBON RES. 270 ohm 1/6W ±5%	132A271
		CARBON RES. 270 ohm 1/5W ±5%	1324271
R72		CARBON RES. 1.8K ohm 1/4W ±5%	1345182
R73		CARBON RES. 1.5K ohm 1/4W ±5%	1345152
R74	⚠	METAL RES. 1.2K ohm 3W ±5%	534C122
			1330662
R75		METAL RES. 1K ohm 3W ±5%	534C102
			1330661
R76	⚠	METAL RES. 3.9K ohm 3W ±5%	534C399
			1330632
R77	⚠	FUSE RES. 1 ohm 1/2W ±5%	5362109
			5367109
R78	⚠	FUSE RES. 2.2 ohm 1W ±5%	5363229
			5368229
R79	⚠	FUSE RES. 2.2 ohm 1W ±5%	5363229
			5368229

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
R80	⚠	CARBON RES. 300K ohm 1/6W ±5%	132A304
		CARBON RES. 300K ohm 1/5W ±5%	1324304
		CARBON RES. 220K ohm 1/6W ±5%	132A224
		CARBON RES. 220K ohm 1/5W ±5%	1324224
R99		CARBON RES. 120 ohm 1/6W ±5%	132A121
		CARBON RES. 120 ohm 1/5W ±5%	1324121
R100		CARBON RES. 470 ohm 1/6W ±5%	132A471
		CARBON RES. 470 ohm 1/5W ±5%	1324471
R101		CARBON RES. 47K ohm 1/6W ±5%	132A473
		CARBON RES. 47K ohm 1/5W ±5%	1324473
		CARBON RES. 3.9K ohm 1/6W ±5%	132A392
		CARBON RES. 3.9K ohm 1/5W ±5%	1324392
R102		CARBON RES. 6.8K ohm 1/6W ±5%	132A682
		CARBON RES. 6.8K ohm 1/5W ±5%	1324682
R103		CARBON RES. 2.2K ohm 1/6W ±5%	132A222
		CARBON RES. 2.2K ohm 1/5W ±5%	1324222
R104		CARBON RES. 120 ohm 1/6W ±5%	132A121
		CARBON RES. 120 ohm 1/5W ±5%	1324121
R105		CARBON RES. 330 ohm 1/6W ±5%	132A331
		CARBON RES. 330 ohm 1/5W ±5%	1324331
R106		CARBON RES. 100 ohm 1/6W ±5%	132A101
		CARBON RES. 100 ohm 1/5W ±5%	1324101
R107		CARBON RES. 15K ohm 1/6W ±5%	132A153
		CARBON RES. 15K ohm 1/5W ±5%	1324153
R108		CARBON RES. 1.2K ohm 1/6W ±5%	132A122
		CARBON RES. 1.2K ohm 1/5W ±5%	1324122
R109		CARBON RES. 3.9K ohm 1/6W ±5%	132A392
		CARBON RES. 3.9K ohm 1/5W ±5%	1324392
R201	⚠	CEMENT RES. 3.9 ohm 5W ±5%	1330900
			1330734
R202	⚠	CEMENT RES. 2.2 ohm 5W±5%	1330896
			1330872
R203	⚠	CARBON RES. 8.2K ohm 1/6W±5%	132A822
			1324822
R204	⚠	CARBON RES. 3.3K ohm 1/6W±5%	132A332
			1324332
R205	⚠	CARBON RES. 220K ohm 1/6W±5%	132A224
			1324224
R206		FUSE RES. 47 ohm 1W ±5%	5363470
			5368470
R207	⚠	CEMENT RES. 220 ohm 15W	1330871
		MISCELLANEOUS	
CN 201		CONNECTOR BASE 2P	1780276
			1780165
To CN6		WIRE ASS'Y	CE6002-03
W4		WIRE ASS'Y	CE8002-04
W101		CONNECTOR BASE 3P	1700669
W201		CONNECTOR BASE 2P	1740799
CF 1		X'TAL	1811291
			1811203
			1811197
CF 2		CERAMIC RESONATOR	1810899
CRT601	⚠	CRT (ITC)	1833074
			1833079

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
DY 601	⚠	CRT (ITC)	1833074
			1833079
F201	⚠	FUSE 4A/125V	5790042
			1790682
FH 201		FUSE HOLDER	1790424
FH 202		FUSE HOLDER	1790424
H1		HEAT SINK J	OEM400060
H2		HEAT SINK B	8S00362
H3		HEAT SINK M	OEM400181
H4		HEAT SINK K	OEM400061
To Q5		HEAT SINK SHEET	1790584
L1		MICRO INDUCTOR 10uH	2165100
			2162100
L2		MICRO INDUCTOR 10uH	2165100
			2162100
L4		POT TYPE COIL 47uH	1170511
			LLBD**DMM01
L201	⚠	LINE FILTER	1812743
L601	⚠	DEGAUSSING COIL	LLBZ***TZ002
PCB 1		MAIN PCB (With CRT PCB)	BB8200F01001
P 201	⚠	POSISTOR	5790124
			1790580
SW 1		SLIDE SWITCH	1621639
			1621654
SFR 1		SEMI FIXED RES. 500 ohm	138N776
			1380564
SFR 2		SEMI FIXED RES. 100K ohm	138N785
			1380573
SP 601		SPEAKER	1520568
			152N589
			1520589
T1	⚠	F.B.TRANS	1812813
T2		H.DRIVE TRANS	1150325
T3		DELAY LINE COIL	113N771
TP 1		TEST PIN	1700093
			1740354
TP 2		TEST PIN	1700093
			1740354
TP 201		TEST PIN	1700093
			1740354
TP 202		TEST PIN	1700093
			1740354
To SP		WIRE ASS'Y	WX1B6000-001
W3		WIRE ASS'Y	WX1B8200-006
W6		WIRE, LEAD	WX3101G2FF25
		CRT C.B.A.	
		TRANSISTORS	
Q1001		TRANSISTOR 2SC2228 (D, E)	C2228D
			C2228E
Q1002		TRANSISTOR 2SC2228 (D, E)	C2228D
			C2228E
Q1003		TRANSISTOR 2SC2228 (D, E)	C2228D
			C2228E

ELECTRICAL REPLACEMENT PARTS LIST [TV] (Continued)

Ref.	⚠	Description	Parts No.
		RESISTORS	
R1001		CARBON RES. 180 ohm 1/6W±5%	132A181
		CARBON RES. 180 ohm 1/5W±5%	1324181
R1002		CARBON RES. 150 ohm 1/6W±5%	132A151
		CARBON RES. 150 ohm 1/5W±5%	1324151
R1003		CARBON RES. 150 ohm 1/6W±5%	132A151
		CARBON RES. 150 ohm 1/5W±5%	1324151
R1004		CARBON RES. 47 ohm 1/6W±5%	132A470
		CARBON RES. 47 ohm 1/5W±5%	1324470
R1005		METAL RES. 15K ohm 1W±5%	534A153
R1006		METAL RES. 15K ohm 1W±5%	534A153
R1007		METAL RES. 15K ohm 1W±5%	534A153
R1008		CARBON RES. 1.8K ohm 1/4W±5%	1345182
R1009		CARBON RES. 1.8K ohm 1/4W±5%	1345182
R1010		CARBON RES. 1.8K ohm 1/4W±5%	1345182
R1011		CARBON RES. 1.5K ohm 1/4W±5%	1345152
R1012		CARBON RES. 1.5K ohm 1/4W±5%	1345152
R1013		CARBON RES. 1.5K ohm 1/4W±5%	1345152
VR1001		SEMI FIXED RES. 20K ohm	1380946
VR1002		SEMI FIXED RES. 20K ohm	1380946
VR1003		SEMI FIXED RES. 20K ohm	1380946
VR1004		SEMI FIXED RES. 100 ohm	1380945
VR1005		SEMI FIXED RES. 100 ohm	1380945
		CAPACITORS	
C1001		CERAMIC CAP. 680PF/50v ±10%	32B3681
			3B42681
C1002		CERAMIC CAP. 0.001uF/50v ±10%	32B3102
			3B42102
C1003		CERAMIC CAP. 820PF/50v ±10%	32B3821
			3B42821
C1004		CERAMIC CAP. 0.01uF/2KV	1220602
		MISCELLANEOUS	
CN1001		CRT SOCKET	1780218
			1780080
CN1002		CONNECTOR PIN 1P	5700122
			1730688
W1		WIRE ASS'Y	WX1B8200-004
W2		WIRE ASS'Y	WX1B8200-005
L1001		MICRO INDUCTOR 330uH	2165331
			2162331
		CONTROL and EARPHONE C.B.A	
		RESISTORS	
R110		CARBON RES. 8.2K ohm 1/6W ±5%	132A822
		CARBON RES. 8.2K ohm 1/5W ±5%	1324822
R111		CARBON RES. 8.2K ohm 1/6W ±5%	132A822
		CARBON RES. 8.2K ohm 1/5W ±5%	1324822
R112		CARBON RES. 4.7K ohm 1/6W ±5%	132A472
		CARBON RES. 4.7K ohm 1/5W ±5%	1324472
R113		CARBON RES. 15K ohm 1/6W ±5%	132A153
		CARBON RES. 15K ohm 1/5W ±5%	1324153
R114		CARBON RES. 18K ohm 1/6W ±5%	132A183
		CARBON RES. 18K ohm 1/5W ±5%	1324183

ELECTRICAL REPLACEMENT PARTS LIST [TV]

Ref.	⚠	Description	Parts No.
R115		CARBON RES. 5.6K ohm 1/6W ±5%	132A562
		CARBON RES. 5.6K ohm 1/5W ±5%	1324562
R116		CARBON RES. 3.3K ohm 1/6W ±5%	132A332
		CARBON RES. 3.3K ohm 1/5W ±5%	1324332
R117		CARBON RES. 3.9K ohm 1/6W ±5%	132A392
		CARBON RES. 3.9K ohm 1/5W ±5%	1324392
R250		CARBON RES. 82 ohm 1/6W ±5%	132A820
		CARBON RES. 82 ohm 1/5W ±5%	1324820
VR9		ROTARY VOLUME 10K ohm	539A875
			539N875
VR10		ROTARY VOLUME 10K ohm	539A875
			539N875
VR 11		ROTARY VOLUME 1K ohm	539A874
			539N874
VR12		ROTARY VOLUME 1K ohm	539A874
			539N874
		MISCELLANEOUS	
CN 6		CONNECTOR BASE 6P	5700108
CN9		CONNECTOR BASE 2P	1730835
EJ 1		EARPHONE JACK	163C419
PCB 2		CONTROL and EARPHONE PCB	BB8200F01002
SP		CONNECTOR BASE 2P	5700107

ELECTRICAL REPLACEMENT PARTS LIST [VCR UNIT]

MCV Large C.B.A. 0VSA02034T (PCB No. BK1800F01001) A, B, C, D, E, F, G
Consists of following separated C.B.A.S (MCV-A~MCV-G)
MCV-A VIDEO / TUNER P.C. Board Assembly....Not available
MCV-B HEAD AMP / AUDIO / SERVO P.C. Board Assembly....Not available
MCV-C SERVO / SYSTEM CONTROL P.C. Board Assembly....Not available
MCV-D DISPLAY / CONTROL P.C. Board Assembly....Not available
MCV-E POWER SUPPLY CONN. P.C. Board Assembly....Not available
MCV-F DRUM / DECK CONN. P.C. Board Assembly....Not available
MCV-G CASS.SW / SENSOR CONN. P.C. Board Assembly....Not available
MSV Y/C PROCESS P.C.Board Assembly....0VSA02234
PSV POWER SUPPLY P.C. Board Assembly 0VSA02218 (PCB No. BK1800F01002)
PRINTED CIRCUIT BOARD ASSEMBLY PARTS LIST
NOTE: Pats marked with a ⚠ have special characteristics important to safely. Before replacing any of these components read carefully the product safety notice of the Service Manual. D

Ref.	⚠	Description	Parts No.
	⚠	**MCV-A VIDEO / TUNER C.B.A.**	
		ICS	
IC701		VOLTAGE REGULATOR IC AN78M09F or NJM78M09FA	AN78M09F
			14L0241
IC702		VOLTAGE REGULATOR IC L5631	L5631
IC703		IC, SYNC.DETECTOR LA7210	14LQ115
		CAPACITORS	
C701		ELECTROLYTIC CAP. 100UF/10V ±20%	526S107S
C709		ELECTROLYTIC CAP. 47UF/35V ±20%	126E476S
C710		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106S
C711		CERAMIC CAP. 0.001UF/50V ± 5%	3B41102
C712		AXIAL CAP. 330PF/50V ± 5%	3B41331
C713		ELECTROLYTIC CAP. 0.47UF/50V ±20%	126F474S
C714		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105S
C715		AXIAL CAP. 270PF/50V ± 5%	3B41271
C716		ELECTROLYTIC CAP. 0.47UF/50V ±20%	126F474S
C717		ELECTROLYTIC CAP. 47UF/6.3V ±20%	126A476S
C718		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C719		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105S
C720		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106S
C721		ELECTROLYTIC CAP. 1000UF/6.3V ±20%	126A108S
C724		CERAMIC CAP. 0.01UF/50V ±10%	12B3103S
C725		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106S
C790		SEMICONDUCTOR CAP. 0.027UF/25V ±10%	12Y2273S
C791		CERAMIC CAP. 0.022UF/50V +80/-20%	12F3223S
C792		CERAMIC CAP. 0.001UF/50V ± 5%	3B11102
		RESISTORS	
R719		CARBON RES. 1/5W ± 5% 750 OHM	1324751
R720		CARBON RES. 1/5W ± 5% 1K OHM	1324102
R721		CARBON RES. 1/5W ± 5% 330K OHM	1324334
R722		CARBON RES. 1/5W ± 5% 820 OHM	1324821
R723		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R724		CARBON RES. 1/5W ± 5% 100K OHM	1324104
R725		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R726		CARBON RES. 1/5W ± 5% 6.8K OHM	1324682
R732		CARBON RES. 1/5W ± 5% 82 OHM	1324820
R734		CARBON RES. 1/5W ± 5% 47 OHM	1324470
R735		CARBON RES. 1/5W ± 5% 2.4K OHM	1324242
R736		CARBON RES. 1/5W ± 5% 33K OHM	1324333

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
R790		CARBON RES. 1/5W ± 5% 820 OHM	1324821
		MISCELLANEOUS	
JK701		RCA JACK (Yellow)	1780077
JK702		RCA JACK (White)	1780076
TU701	⚠	TUNER UNIT	1813570
X701		CERAMIC RESONATOR 500kHz	1810414
A-19		JACK BOARD (CONSISTS OF RF TERMINAL AND NUT)	0VM300260
		RCA PLUG CORD	WPZ0101TM003
		MCV-B HEAD AMP / AUDIO / SERVO C.B.A.	
		ICS	
IC401		IC, MOTOR DRIVER BA6219B	14LF232
IC501		IC, SYSTEM CONTROL CXP-50112H-146Q	14D0800
IC502		IC BA10339 or	BA10339
		NJM2901N or	NJM2901N
		LA6339	LA6339
IC504		IC MOTOR DRIVER BA6209N	14LF492
IC506		VOLTAGE REGULATOR IC AN78L05 or	AN78L05
		NJM78L05A	J78L05A
IC508		IC SYSTEM RESET MN1280(R)	14DN160
IC509		VOLTAGE REGULATOR IC AN7805F or	AN7805F
		NJM7805FA or	J7805FA
		uPC7805HF	PC7805HF
		TRANSISTORS	
Q501		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
Q502		TRANSISTOR 2SB1010(Q) or	B1010Q
		2SB1010(R) or	B1010R
		2SB892(S) or	B892S
		2SB892(T)	B892T
Q503		TRANSISTOR 2SD1384(Q) or	D1384Q
		2SD1384(R) or	D1384R
		2SD1207(S) or	D1207S
		2SD1207(T)	D1207T
Q504		TRANSISTOR 2SD2005(Q) or	QSD2005T105Q
		2SD2005(R)	QSD2005T105R
		DIODES	
D501		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D502		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D505		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D506		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D508		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
D509		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D512		ZENER DIODE MTZ5.6B-T77	MTZ5.6B
		CAPACITORS	
C401		SEMICONDUCTOR CAP. 0.1UF/25V +80/-20%	1220520
C403		CERAMIC CAP. 0.1UF/50V +80/-20%	3F40104
C404		CERAMIC CAP. 0.1UF/50V +80/-20%	3F40104
C424		ELECTROLYTIC CAP. 100UF/25V ±20%	126D107
C505		ELECTROLYTIC CAP. 47UF/16V ±20%	526T476
C506		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C507		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C508		ELECTROLYTIC CAP. 100UF/16V ±20%	126C107
C509		SEMICONDUCTOR CAP. 0.1UF/25V +80/-20%	1220520
C510		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C511		ELECTROLYTIC CAP. 47UF/25V ±20%	526U476
C513		ELECTROLYTIC CAP. 47UF/6.3V ±20%	526R476
C514		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C515		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C516		ELECTROLYTIC CAP. 47UF/16V ±20%	126C476
C517		ELECTROLYTIC CAP. 47UF/6.3V ±20%	126A476
C520		ELECTROLYTIC CAP. 47UF/6.3V ±20%	526R476
C521		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C522		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C523		CERAMIC CAP. 0.0022UF/50V ±10%	32B3222
C524		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
C525		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
C527		CERAMIC CAP. 0.001UF/50V ±10%	32B3102
C529		AXIAL CAP. 220PF/50V ± 5%	3B41221
C530		AXIAL CAP. 220PF/50V ± 5%	3B41221
C531		AXIAL CAP. 220PF/50V ± 5%	3B41221
C590		CERAMIC CAP. 0.022UF/50V +80/-20%	12F3223
		RESISTORS	
R402		CARBON RES. 1/5W ± 5% 2.7K OHM	1324272
R403		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R404		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R405		CARBON RES. 1/5W ± 5% 2.7K OHM	1324272
R501		CARBON RES. 1/5W ± 5% 82K OHM	1324823
R502		CARBON RES. 1/5W ± 5% 1.2K OHM	1324122
R503		CARBON RES. 1/5W ± 5% 4.7K OHM	1324472
R504		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R505		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R506		CARBON RES. 1/5W ± 5% 470K OHM	1324474
R507		CARBON RES. 1/5W ± 5% 470K OHM	1324474
R508		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R509		CARBON RES. 1/5W ± 5% 15K OHM	1324153
R510		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R511		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R518		CARBON RES. 1/5W ± 5% 4.7K OHM	1324472
R519		CARBON RES. 1/5W ± 5% 9.1K OHM	1324912
R520		CARBON RES. 1/5W ± 5% 18K OHM	1324183
R521		CARBON RES. 1/5W ± 5% 39K OHM	1324393
R522		CARBON RES. 1/5W ± 5% 75K OHM	1324753
R523		CARBON RES. 1/5W ± 5% 150K OHM	1324154
R524		CARBON RES. 1/5W ± 5% 6.8K OHM	1324682

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
R525		CARBON RES. 1/5W ± 5% 6.8K OHM	1324682
R526		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R529		CARBON RES. 1/5W ± 5% 2.2K OHM	1324222
R530		CARBON RES. 1/5W ± 5% 100K OHM	1324104
R531		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R532		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R533		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R534		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R536		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R540		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R541		CARBON RES. 1/5W ± 5% 100 OHM	1324101
R542		CARBON RES. 1/5W ± 5% 4.7K OHM	1324472
R543		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R544		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R549		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R550		CARBON RES. 1/5W ± 5% 47K OHM	1324473
R551		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R552		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R553		CARBON RES. 1/5W ± 5% 470 OHM	1324471
R558		METAL RES. 1W ± 5% 3.3 OHM	1330395
R559		CARBON RES. 1/5W ± 5% 100 OHM	1324101
		MISCELLANEOUS	
CL- 9		FFC CONNECTOR 28P	1700468
			1700930
			1700530
CL-10		FFC CONNECTOR 28P	1700468
			1700930
			1700530
L501		INDUCTOR 2.2UH	2165229T
RX504		RESISTOR ALAY 6P 47KOHM	1370136
RX505		RESISTOR ALAY 6P 47KOHM	1370136
X501		CERAMIC RESONATOR 4.19MH	1812885
B2-2		PCB HOLDER	0VM400537
B2-3		HEATSINK, IC	0VM400348
B2-12		IC PLATE, SHIELD	0VM400630
L2-033		SCREW, TAPPING	DBM13100
		MCV-C SERVO / SYSTEM CONTROL C.B.A.	
		ICS	
HIC401	⚠	IC HYBRID SERVO	1812240
IC 1		IC H-AMP. HA118041NT	14LH527
IC201		IC BA7767AS	14LF301
IC402		IC SERVO CONTROL MN6748FVAN	14DN362
		TRANSISTORS	
Q 1		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
Q 2		TRANSISTOR 2SA1317(T) or	A1317T
		2SA1317(S)	A1317S
Q 4		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
Q201		TRANSISTOR 2SC2060(Q) or	C2060Q
		2SD400(F)	D400F
Q405		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
QR 1		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ES
		2SC3400	C3400
QR 2		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ES
		2SC3400	C3400
QR201		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ES
		2SC3400	C3400
		DIODES	
D402		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
D451		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040M	US1040M
		CAPACITORS	
C 1		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
			122Z122
C 2		SEMICONDUCTOR CAP. 0.1UF/25V +80/-20%	1220520
C 3		AXIAL CAP. 22PF/50V ± 5%	3S41220
C 4		SEMICONDUCTOR CAP. 0.1UF/25V +80/-20%	1220520
C 5		AXIAL CAP. 22PF/50V ± 5%	3S41220
C 6		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
			122Z122
C 7		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
			122Z122
C 8		SEMICONDUCTOR CAP. 0.047UF/25V ±10%	12Y2473
C 9		AXIAL CAP. 27PF/50V ± 5%	3S41270
C 10		AXIAL CAP. 390PF/50V ± 5%	3B41391
C 11		ELECTROLYTIC CAP. 0.33UF/50V ±20%	526W334
C 13		AXIAL CAP. 39PF/50V ± 5%	3S41390
C 14		ELECTROLYTIC CAP. 47UF/6.3V ±20%	526R476
C 15		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
			122Z122
C 16		AXIAL CAP. 27PF/50V ± 5%	3S41270
C 17		CERAMIC CAP. 0.047UF/25V +80/-20%	3F45473
C 18		AXIAL CAP. 47PF/50V ± 5%	3S41470
C 19		ELECTROLYTIC CAP. 47UF/6.3V ±20%	526R476
C 20		CERAMIC CAP. 0.047UF/25V +80/-20%	3F45473
C 21		CERAMIC CAP. 0.022UF/25V +80/-20%	1220843
			122Z122
C 22		AXIAL CAP. 18PF/50V ± 5%	3S41180
C 23		AXIAL CAP. 150PF/50V ± 5%	3B41151
C 24		AXIAL CAP. 68PF/50V ± 5%	3S41680
C 29		AXIAL CAP. 27PF/50V ± 5%	3S41270
C 30		AXIAL CAP. 22PF/50V ± 5%	3S41220
C 31		CERAMIC CAP. 0.01UF/50V +80/-20%	32F3103
C 32		CERAMIC CAP. 0.01uF/16V ±20%	3Y4D103
C201		MYLAR CAP. 0.047UF/100V ± 5%	1255473
C202		ELECTROLYTIC CAP. 47UF/16V ±20%	126C476
C203		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
C204		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103
C205		AXIAL CAP. 220PF/50V ± 5%	3B41221
C206		CERAMIC CAP. 0.0018UF/50V ±10%	32B3182
C207		CERAMIC CAP. 0.0012UF/16V ±10%	3X4C122
C208		ELECTROLYTIC CAP. 4.7UF/25V ±20%	124L475
C209		AXIAL CAP. 100PF/50V ± 5%	3B41101
C210		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103
C211		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C212		AXIAL CAP. 0.001UF/50V ± 5%	3B41102
C213		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C214		SEMICONDUCTOR CAP. 0.0082UF/25V ±10%	12Y2822
C215		ELECTROLYTIC CAP. 47UF/6.3V ±20%	126A476
C216		SEMICONDUCTOR CAP. 0.1UF/25V +80/-20%	1220520
C217		CERAMIC CAP. 0.001UF/50V ± 5%	3B41102
C218		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C220		SEMICONDUCTOR CAP. 0.018UF/25V ±10%	12Y2183
C221		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103
C223		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C225		ELECTROLYTIC CAP. 33UF/16V ±20%	126C336
C226		ELECTROLYTIC CAP. 100UF/16V ±20%	126C107
C227		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C230		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C231		SEMICONDUCTOR CAP. 0.0082UF/25V ±10%	12Y2822
C420		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C425		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C426		ELECTROLYTIC CAP. 1UF/50V ±20% H7	526W105
C427		SEMICONDUCTOR CAP. 0.047UF/25V ±10%	12Y2473
C428		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103
C429		ELECTROLYTIC CAP. 1UF/50V ±20% H7	526W105
C430		ELECTROLYTIC CAP. 10UF/16V ±20% H7	526T106
C431		SEMICONDUCTOR CAP. 0.047UF/16V +80/-20%	1220523
C432		ELECTROLYTIC CAP. 10UF/16V ±20% H7	526T106
C433		ELECTROLYTIC CAP. 2.2UF/50V ±20% NP	122Z675
C434		ELECTROLYTIC CAP. 8.2UF/16V ±20%	126C825
C435		ELECTROLYTIC CAP. 47UF/6.3V ±20% H7	526R476
C436		CERAMIC CAP. 0.1UF/50V +80/-20%	3F40104
C437		CERAMIC CAP. 0.0047UF/16V ±10%	3X4C472
C438		CERAMIC CAP. 0.0047UF/16V ±10%	3X4C472
C439		SEMICONDUCTOR CAP. 0.1UF/25V ±10%	12Y2104
C440		SEMICONDUCTOR CAP. 0.01UF/25V ±10%	12Y2103
C441		POLYESTER FILM CAP. 0.033UF/50V ± 5%	1254333
C442		POLYESTER FILM CAP. 0.15UF/50V ± 5%	1254154
C445		SEMICONDUCTOR CAP. 0.1UF/25V ±10%	12Y2104
C446		SEMICONDUCTOR CAP. 0.047UF/16V +80/-20%	1220523
C447		ELECTROLYTIC CAP. 47UF/10V ±20% H7	526S476
C448		CERAMIC CAP. 0.01UF/16V ±20%	3Y4D103
		RESISTORS	
R 1		CARBON RES. 1/5W ± 5% 150 OHM	1324151
R 2		CARBON RES. 1/5W ± 5% 180 OHM	1324181
R 3		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R 4		CARBON RES. 1/5W ± 5% 330 OHM	1324331
R 5		CARBON RES. 1/5W ± 5% 1K OHM	1324102
R 6		CARBON RES. 1/5W ± 5% 18K OHM	1324183
R 7		CARBON RES. 1/5W ± 5% 2.2K OHM	1324222
R 8		CARBON RES. 1/5W ± 5% 1.5K OHM	1324152

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description		Parts No.
R 9		CARBON RES.	1/5W ± 5% 470K OHM	1324474
R 10		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R 11		CARBON RES.	1/5W ± 5% 3.3K OHM	1324332
R 12		CARBON RES.	1/5W ± 5% 1.5K OHM	1324152
R 13		CARBON RES.	1/5W ± 5% 470 OHM	1324471
R 14		CARBON RES.	1/5W ± 5% 5.6K OHM	1324562
R 15		CARBON RES.	1/5W ± 5% 3.3K OHM	1324332
R 16		CARBON RES.	1/5W ± 5% 1.5K OHM	1324152
R 17		CARBON RES.	1/5W ± 5% 2.7K OHM	1324272
R 18		CARBON RES.	1/5W ± 5% 47K OHM	1324473
R 20		CARBON RES.	1/5W ± 5% 2.2K OHM	1324222
R 21		CARBON RES.	1/5W ± 5% 820 OHM	1324821
R 22		CARBON RES.	1/5W ± 5% 1K OHM	1324102
R 23		CARBON RES.	1/5W ± 5% 3.3K OHM	1324332
R 24		CARBON RES.	1/5W ± 5% 1K OHM	1324102
R 25		CARBON RES.	1/5W ± 5% 5.6 OHM	1324569
R 26		CARBON RES.	1/5W ± 5% 5.6 OHM	1324569
R 27		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
R 28		CARBON RES.	1/5W ± 5% 1.8K OHM	1324182
R201		CARBON RES.	1/5W ± 5% 4.7 OHM	1324479
R202		CARBON RES.	1/5W ± 5% 6.8K OHM	1324682
R203		CARBON RES.	1/5W ± 5% 47 OHM	1324470
R204		CARBON RES.	1/5W ± 5% 4.7 OHM	1324479
R205		CARBON RES.	1/5W ± 5% 100 OHM	1324101
R206		CARBON RES.	1/5W ± 5% 10K OHM	1324103
R207		CARBON RES.	1/5W ± 5% 220 OHM	1324221
R208		CARBON RES.	1/5W ± 5% 330K OHM	1324334
R209		CARBON RES.	1/5W ± 5% 10K OHM	1324103
R210		CARBON RES.	1/5W ± 5% 6.8K OHM	1324682
R211		CARBON RES.	1/5W ± 5% 8.2K OHM	1324822
R212		CARBON RES.	1/5W ± 5% 3.3K OHM	1324332
R213		CARBON RES.	1/5W ± 5% 1M OHM	1324105
R214		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R215		CARBON RES.	1/5W ± 5% 33K OHM	1324333
R216		CARBON RES.	1/5W ± 5% 1.5K OHM	1324152
R217		CARBON RES.	1/5W ± 5% 5.6K OHM	1324562
R218		CARBON RES.	1/5W ± 5% 24K OHM	1324243
R219		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R220		CARBON RES.	1/5W ± 5% 1K OHM	1324102
R222		CARBON RES.	1/5W ± 5% 560 OHM	1324561
R223		CARBON RES.	1/5W ± 5% 560 OHM	1324561
R225		CARBON RES.	1/5W ± 5% 27K OHM	1324273
R226		CARBON RES.	1/5W ± 5% 68K OHM	1324683
R227		CARBON RES.	1/5W ± 5% 47K OHM	1324473
R420		CARBON RES.	1/5W ± 5% 180 OHM	1324181
R451		CARBON RES.	1/5W ± 5% 47K OHM	1324473
R452		CARBON RES.	1/5W ± 5% 470K OHM	1324474
R453		CARBON RES.	1/5W ± 5% 2.2K OHM	1324222
R454		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R459		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R461		CARBON RES.	1/5W ±2% 10K OHM	1354103
R462		CARBON RES.	1/5W ±2% 10K OHM	1354103
R463		CARBON RES.	1/5W ± 5% 100 OHM	1324101
R464		CARBON RES.	1/5W ± 5% 10K OHM	1324103
R465		CARBON RES.	1/5W ± 5% 10K OHM	1324103

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
R466		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R467		CARBON RES. 1/5W ± 5% 2.2K OHM	1324222
R470		CARBON RES. 1/5W ± 5% 1K OHM	1324102
R473		CARBON RES. 1/5W ± 5% 3.9K OHM	1324392
R474		CARBON RES. 1/5W ± 5% 1.5K OHM	1324152
R476		CARBON RES. 1/5W ± 5% 4.7K OHM	1324472
R480		CARBON RES. 1/5W ± 5% 6.8K OHM	1324682
R498		CARBON RES. 1/5W ± 5% 10K OHM	1324103
R499		CARBON RES. 1/5W ± 5% 10K OHM	1324103
		MISCELLANEOUS	
CL-10		FFC CONNECTOR BASE, TOP 28P	1700468
			1700930
			1700530
CN-A		CONNECTOR SOCKET 17P	1700762
CN-E		CONNECTOR ASS'Y 6P ACE HEAD LEAD	0VE400378
CN-F		CONNECTOR ASS'Y 2P FE HEAD LEAD	0VE400323
CN-G		CONNECTOR BASE 6P	1770601
L 1		INDUCTOR 33UH ±10%	2165330T
L 2		INDUCTOR 27UH ±10%	2165270T
L 3		INDUCTOR 56UH ±10%	2165560T
L 4		INDUCTOR 12UH ±10%	2165120T
L 5		INDUCTOR 18UH ±10%	2165180T
L 6		INDUCTOR 180UH ±10%	2165181T
L 7		INDUCTOR 100UH ±10%	2165101T
L 8		INDUCTOR 22UH ±10%	2165220T
L 10		INDUCTOR 150UH ±10%	2165151T
L 11		INDUCTOR 100UH ±10%	2165101T
L201		INDUCTOR 18mH	117M500T
T201		COIL, OSC AUDIO	1130686
			113M686
			113D686
VR 1		TRIMMER POTENTIOMETER 2.2KOHM	138A955
VR 2		TRIMMER POTENTIOMETER 1KOHM	138A953
VR201		TRIMMER POTENTIOMETER 100KOHM	138A965
VR401		TRIMMER POTENTIOMETER 200KOHM	1380877
VR402		TRIMMER POTENTIOMETER 220KOHM	138A967
B2-4		PLATE BOTTOM SHIELD	0VM400538
B2-5		PLATE TOP SHIELD	~~VD7991~~ 6N50372
B2-6		HOLDER FIP	~~VD3038?~~ 6N50285
		MCV-D DISPLAY / CONTROL C.B.A.	
		DIODES	
D801		DIODE 1SS252 or	1SS252
		GBM01U	GMB01U
D802		DIODE 1SS252 or	1SS252
		GBM01U	GMB01U
D803		DIODE 1SS252 or	1SS252
		GBM01U	GMB01U
D804		DIODE 1SS252 or	1SS252
		GBM01U	GMB01U
D805		DIODE 1N4002	1N4002
D806		SWITCHING DIODE 1SS254 or	1SS254
		GMB01B or	GMB01B
		US1040MT	US1040M

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description		Parts No.
D807		SWITCHING DIODE	1SS254 or	1SS254
			GMB01B or	GMB01B
			US1040M	US1040M
D808		SWITCHING DIODE	1SS254 or	1SS254
			GMB01B or	GMB01B
			US1040M	US1040M
D809		SWITCHING DIODE	1SS254 or	1SS254
			GMB01B or	GMB01B
			US1040M	US1040M
D810		SWITCHING DIODE	1SS254 or	1SS254
			GMB01B or	GMB01B
			US1040M	US1040M
D811		SWITCHING DIODE	1SS254 or	1SS254
			GMB01B or	GMB01B
			US1040M	US1040M
		CAPACITORS		
C801		ELECTROLYTIC CAP.	100UF/6.3V ±20%	526R107S
C802		AXIAL CAP.	0.047UF/25V +80/-20%	3F45473
		RESISTORS		
R801		CARBON RES.	1/5W ± 5% 4.7K OHM	1324472
R804		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
R805		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
R806		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
R807		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
R808		CARBON RES.	1/5W ± 5% 1.2K OHM	1324122
		MISCELLANEOUS		
RS801		REMOTE SENSOR UNIT		1812501
SW801		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW802		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW803		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW804		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW806		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW808		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW809		PUSH SWITCH		5622161 or
				5622102 or
				5622123
SW811		PUSH SWITCH		5622101 or
				5622102 or
				5622123
SW812		PUSH SWITCH		5622161 or
				5622102 or
				5622123

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
SW815		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW816		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW817		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW818		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW819		PUSH SWITCH	5622101 or
			5622102 or
			5622123
SW821		PUSH SWITCH	5622160 or
			5622161
SW822		PUSH SWITCH	5622160 or
			5622161
SW823		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW824		PUSH SWITCH	5622161 or
			5622102 or
			5622123
SW826		SLIDE SWITCH 1621826	~~5622101 or~~
			~~5622102 or~~
			~~5622123~~
SW827		SLIDE SWITCH 1621826	~~5622101 or~~
			~~5622102 or~~
			~~5622123~~
SW828		SLIDE SWITCH	1621825
VR801		ROTARY POTENTIOMETER 250KOHM B	539A660
FL801		FIP FIP4DM6	1813152
L801		INDUCTOR 47UH ±10%	2165470
			539N661
CL-9		FFC CONNECTOR BASE, SIDE 28P	1700494
			1700952
B2-6		HOLDER, FIP	6N50285
		MCV-E POWER SUPPLY CONN.C.B.A.	
CN-1		ANGLE PIN CONNECTOR 15P	1770620
		MCV-F DRUM / DECK CONN.C.B.A.	
CN-D		ANGLE PIN CONNECTOR 6P	1770617
		MCV-G CASS.SW / SENSOR CONN.C.B.A.	
CN-C		ANGLE PIN CONNECTOR 9P	1770604

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
		MSV Y/C PROCESS C.B.A.	
		P.C.B	1614858
		ICS	
IC 51		IC LA7326	14LQ487
IC 52		IC LA7317	14LQ533
IC 53		IC LC8991	14LQ532
IC53		IC MSM7400RS	GMSM7400RS**
IC 54		VOLTAGE REGULATOR IC AN78M05 or	AN78M05
		VOLTAGE REGULATOR IC NJM78M05FA	14L0238
		TRANSISTORS	
Q 51		TRANSISTOR 2SC2058(P) or	C2058PZ
		TRANSISTOR 2SC2058(Q) or	C2058QZ
		TRANSISTOR 2SC2839(E) or	C2839EZ
		TRANSISTOR 2SC2839(F)	C2839FZ
Q 52		TRANSISTOR 2SC536SP(F) or	C536SFZ
		TRANSISTOR 2SC1740(Q) or	C1740QZ
		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(E)	C536SEZ
Q 53		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(F) or	C536SFZ
		TRANSISTOR 2SC1740(Q) or	C1740QZ
		TRANSISTOR 2SC536SP(E)	C536SEZ
Q 54		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(F) or	C536SEZ
		TRANSISTOR 2SC1740(Q) or	C1740QZ
		TRANSISTOR 2SC536SP(E)	C536SEZ
Q 55		TRANSISTOR 2SA933(Q) or	A933QZ
		TRANSISTOR 2SA933(R) or	A933RZ
		TRANSISTOR 2SA608SP(E) or	A608SEZ
		TRANSISTOR 2SA608SP(F)	A608SFZ
Q 56		TRANSISTOR 2SC2058(P) or	C2058PZ
		TRANSISTOR 2SC2058(Q) or	C2058QZ
		TRANSISTOR 2SC2839(E) or	C2839EZ
		TRANSISTOR 2SC2839(F)	C2839FZ
Q 57		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(F) or	C536SFZ
		TRANSISTOR 2SC1740(Q) or	C1740QZ
		TRANSISTOR 2SC536SP(E)	C536SEZ
Q 58		TRANSISTOR 2SA933(Q) or	A933QZ
		TRANSISTOR 2SA933(R) or	A933RZ
		TRANSISTOR 2SA608SP(E) or	A608SEZ
		TRANSISTOR 2SA608SP(F)	A608SFZ
Q 59		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(E) or	C536SEZ
		TRANSISTOR 2SC536SP(F) or	C536SFZ
		TRANSISTOR 2SC1740(Q)	C1740QZ
Q 60		TRANSISTOR 2SC1740(R) or	C1740RZ
		TRANSISTOR 2SC536SP(E) or	C536SEZ
		TRANSISTOR 2SC536SP(F) or	C536SFZ
		TRANSISTOR 2SC1740(Q)	C1740QZ
QR 51		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 52		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
QR 53		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 54		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 55		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 56		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 57		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 58		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
QR 59		RES. BUILT-IN TRANSISTOR DTC124ES or	C124ESZ
		RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
		DIODES	
D 51		DIODE 1SS254 or	1SS254T
		DIODE GMB01B or	GMB01BT
		DIODE US1040M	US1040MT
D 52		DIODE 1SS254 or	1SS254T
		DIODE GMB01B or	GMB01BT
		DIODE US1040M	US1040MT
D 53		DIODE 1SS254 or	1SS254T
		DIODE GMB01B or	GMB01BT
		DIODE US1040M	US1040MT
D 54		DIODE 1SS254 or	1SS254T
		DIODE GMB01B or	GMB01BT
		DIODE US1040M	US1040MT
D 55		DIODE 1SS254 or	1SS254T
		DIODE GMB01B or	GMB01BT
		DIODE US1040M	US1040MT
		CAPACITORS	
C 51		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 52		CHIP CERAMIC CAP. 100PF/50V ±5%	1270101C
C 53		CHIP CERAMIC CAP. 0.047UF/50V +80/-20%	12F3473C
C 54		ELECTROLYTIC CAP. 47UF/6.3V ±20% H7	526R476S
C 55		CHIP CERAMIC CAP. 100PF/50V ±5%	1270101C
C 56		CHIP CERAMIC CAP. 100PF/50V ±5%	1270101C
C 57		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 58		ELECTROLYTIC CAP. 1UF/50V ±20% H7	526W105S
C 59		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 60		CHIP CERAMIC CAP. 0.047UF/50V +80/-20%	12F3473C
C 61		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 62		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105S
C 63		CHIP CERAMIC CAP. 0.022UF/50V +80/-20%	12F3223C
C 64		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105S
C 65		ELECTROLYTIC CAP. 1UF/50V ±20% H7	526W105S
C 66		CHIP CERAMIC CAP. 0.022UF/50V +80/-20%	12F3223C
C 67		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 68		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 69		CHIP CERAMIC CAP. 0.047UF/50V +80/-20%	12F3473C
C 70		CHIP CERAMIC CAP. 0.01UF/50V +80/-20%	12F3103C
C 71		CHIP CERAMIC CAP. 150PF/50V ±5%	1270151C
C 72		CHIP CERAMIC CAP. 200PF/50V ±5%	1270201C
C 73		CHIP CERAMIC CAP. 330PF/50V ±5%	1270331C
C 74		CHIP CERAMIC CAP. 0.022UF/50V +80/-20%	12F3223C

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description		Parts No.
C 75		CHIP CERAMIC CAP.	0.047UF/25V ±10%	12B2473C
C 76		ELECTROLYTIC CAP.	10UF/16V ±20%	126C106S
C 77		ELECTROLYTIC CAP.	47UF/6.3V ±20%	126A476S
C 78		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C 79		CHIP CERAMIC CAP.	0.068UF/25V ±10%	12B2683C
C 80		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C 81		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C 82		CHIP CERAMIC CAP.	10PF/50V ±0.5%	1270100C
C 83		CHIP CERAMIC CAP.	10PF/50V ±0.5%	1270100C
C 84		ELECTROLYTIC CAP.	47UF/6.3V ±20%	126A476S
C 85		CHIP CERAMIC CAP.	0.022UF/50V+80/-20%	12F3223C
C 86		ELECTROLYTIC CAP.	2.2UF/50V ±20%	126F225S
C 87		ELECTROLYTIC CAP.	2.2UF/50V ±20%	126F225S
C 88		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C 89		ELECTROLYTIC CAP.	0.47UF/50V ±20%	126F474S
C 90		ELECTROLYTIC CAP.	10UF/16V ±20%	126C106S
C 92		CHIP CERAMIC CAP.	5PF/50V	1270509C
C 93		CHIP CERAMIC CAP.	0.047UF/50V +80/-20%	12F3473C
C 94		CHIP CERAMIC CAP.	33PF/50V ±5%	1270330C
C 95		CHIP CERAMIC CAP.	10PF/50V	1270100C
C 96		ELECTROLYTIC CAP.	0.47UF/50V ±20%NP	126X474S
C 97		ELECTROLYTIC CAP.	2.2UF/50V ±20%NP	126X225S
C 98		ELECTROLYTIC CAP.	2.2UF/50V ±20%	126F225S
C 99		ELECTROLYTIC CAP.	0.47UF/50V ±20%	126F474S
C100		CHIP CERAMIC CAP.	39PF/50V ±5%	1270390C
C101		CHIP CERAMIC CAP.	82PF/50V ±5%	1270820C
C102		CHIP CERAMIC CAP.	33PF/50V ±5%	1270330C
C103		CHIP CERAMIC CAP.	47PF/50V ±5%	1270470C
C104		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C105		ELECTROLYTIC CAP.	10UF/16V ±20%	126C106S
C106		ELECTROLYTIC CAP.	1UF/50V ±20%	126F105S
C107		ELECTROLYTIC CAP.	4.7UF/25V ±20%	126D475S
C108		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C109		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C110		CHIP CERAMIC CAP.	22PF/50V ±5%	1270220C
C111		CHIP CERAMIC CAP.	82PF/50V ±5%	1270820C
C112		CHIP CERAMIC CAP.	22PF/50V ±5%	1270220C
C113		CHIP CERAMIC CAP.	180PF/50V ±5%	1270181C
C114		CHIP CERAMIC CAP.	47PF/50V ±5%	1270470C
C115		CHIP CERAMIC CAP.	100PF/50V ±5%	1270101C
C117		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C118		CHIP CERAMIC CAP.	0.01UF/50V +80/-20%	12F3103C
C119		CHIP CERAMIC CAP.	390PF/50V ±5%	1270391C
C120		CHIP CERAMIC CAP.	56PF/50V ±5%	1270560C
		RESISTORS		
R 51		CHIP RES.	1/10W ±5% 1.2K OHM	134F122C
R 52		CHIP RES.	1/10W ±5% 150K OHM	134F154C
R 53		CHIP RES.	1/10W ±5% 100K OHM	134F104C
R 54		CHIP RES.	1/10W ±5% 10K OHM	134F103C
R 55		CHIP RES.	1/10W ±5% 4.7K OHM	134F472C
R 56		CHIP RES.	1/10W ±5% 3.3K OHM	134F332C
R 57		CHIP RES.	1/10W ±5% 8.2K OHM	134F822C
R 58		CHIP RES.	1/10W ±5% 22K OHM	134F223C
R 59		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 60		CHIP RES.	1/10W ±5% 22K OHM	134F223C

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description		Parts No.
R 61		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 62		CHIP RES.	1/10W ±5% 1.5K OHM	134F152C
R 63		CHIP RES.	1/10W ±5% 220 OHM	134F221C
R 64		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 65		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 66		CHIP RES.	1/10W ±5% 6.8K OHM	134F682C
R 67		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 68		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 69		CHIP RES.	1/10W ±5% 270 OHM	134F271C
R 70		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 71		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 72		CHIP RES.	1/10W ±5% 22K OHM	134F223C
R 73		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 74		CHIP RES.	1/10W ±5% 1.2K OHM	134F122C
R 75		CHIP RES.	1/10W ±5% 1.8K OHM	134F182C
R 76		CHIP RES.	1/10W ±5% 1.8K OHM	134F182C
R 77		CHIP RES.	1/10W ±5% 470 OHM	134F471C
R 78		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 79		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 80		CHIP RES.	1/10W ±5% 33K OHM	134F333C
R 81		CHIP RES.	1/10W ±5% 1.2K OHM	134F122C
R 83		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 84		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R 85		CHIP RES.	1/10W ±5% 470K OHM	134F474C
R 86		CHIP RES.	1/10W ±5% 150K OHM	134F154C
R 87		CHIP RES.	1/10W ±5% 27K OHM	134F273C
R 88		CHIP RES.	1/10W ±5% 39K OHM	134F393C
R 89		CHIP RES.	1/10W ±5% 11K OHM	134F113C
R 90		CHIP RES.	1/10W ±5% 4.7K OHM	134F472C
R 91		CHIP RES.	1/10W ±5% 8.2K OHM	134F822C
R 92		CHIP RES.	1/10W ±5% 4.7K OHM	134F472C
R 93		CHIP RES.	1/10W ±5% 2.7K OHM	134F272C
R 94		CHIP RES.	1/10W ±5% 680 OHM	134F681C
R 95		CHIP RES.	1/10W ±5% 3.3K OHM	134F332C
R 97		CHIP RES.	1/10W ±5% 1M OHM	134F105C
R 98		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R 99		CHIP RES.	1/10W ±5% 1M OHM	134F105C
R100		CHIP RES.	1/10W ±5% 1M OHM	134F105C
R101		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R102		CHIP RES.	1/10W ±5% 3.3K OHM	134F332C
R103		CHIP RES.	1/10W ±5% 8.2K OHM	134F822C
R104		CHIP RES.	1/10W ±5% 1.8K OHM	134F182C
R105		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R106		CHIP RES.	1/10W ±5% 560 OHM	134F561C
R107		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R108		CHIP RES.	1/10W ±5% 2.2K OHM	134F222C
R109		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R110		CHIP RES.	1/10W ±5% 4.7K OHM	134F472C
R111		CHIP RES.	1/10W ±5% 1.2K OHM	134F122C
R112		CHIP RES.	1/10W ±5% 1.5K OHM	134F152C
R113		CHIP RES.	1/10W ±5% 1K OHM	134F102C
R114		CHIP RES.	1/10W ±5% 2.7K OHM	134F272C
R115		CHIP RES.	1/10W ±5% 0 OHM	134F000C
		MISCELANEOUS		
CN-V		PIN HEADER, ANGLE, 22P		5700320

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
DL 51		COMB FILTER 3.579545MHZ or	1813209
		COMB FILTER EFD-HC645B15M	1813389
L 51		INDUCTOR 680UH ±10% or	117N554S
		MICRO INDUCTOR 680UH ±10%	2162681S
L 52		MICRO INDUCTOR 330UH ±10%	2165331T
L 53		INDUCTOR 680UH ±10% or	117N554S
		MICRO INDUCTOR 680UH ±10%	2162681S
L 55		MICRO INDUCTOR 39UH ±10%	2165390T
L 56		MICRO INDUCTOR 3.9UH ±10%	2165399T
L 58		MICRO INDUCTOR 47UH ±10%	2165470T
L 59		MICRO INDUCTOR 100UH ±10%	2165101T
L 60		MICRO INDUCTOR 68UH ±10%	2165680T
L 61		MICRO INDUCTOR 68UH ±10%	2165680T
L 62		MICRO INDUCTOR 6.8UH ±10%	2162689S
T 51		L.P.F. 3MHZ	1813094
T 52		FILTER SFBBLB000F4E-4276-03 or	1813340
		3 IN 1 FILTER	1813410
TP 51		TEST PIN RT-01T-1.3B	1720688
TP 52		TEST PIN RT-01T-1.3B	1720688
TP 53		TEST PIN RT-01T-1.3B	1720688
VR 51		P.O.T. 5KOHM	138J780
VR 52		P.O.T. 5KOHM	138J780
VR 53		P.O.T. 5KOHM	138J780
VR 54		P.O.T. 1KOHM	138J777
VR 55		SEMI FIXED RES. 500 OHM	138J776
X 51		X'TAL 3.579545MHZ	1811371
		PSV POWER SUPPLY C.B.A.	
		ICS	
IC601	⚠	IC,VOLTAGE REGULATOR AN7812F or	AN7812F
		NJM7821FA or	14L0251
		UPC7812HF	PC7812HF
IC602	⚠	IC,VOLTAGE REGULATOR AN7812F or	AN7812F
		NJM7821FA or	14L0251
		UPC7812HF	PC7812HF
IC603	⚠	IC,VOLTAGE REGULATOR AN7818F or	AN7818F
		NJM7818FA or	14L0253
		UPC7818HF	PC7818HF
IC951		IC AN5265	14LN160
		TRANSISTORS	
Q601		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
Q603		TRANSISTOR 2SB1010(Q) or	B1010Q
		2SB1010(R) or	B1010R
		2SB892(S) or	B892S
		2SB892(T)	B892T
Q604		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF

ELECTRICAL REPLACEMENT PARTS LIST [VCR] (Continued)

Ref.	⚠	Description	Parts No.
Q951		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
Q952		TRANSISTOR 2SC1740(Q) or	C1740Q
		2SC1740(R) or	C1740R
		2SC536SP(E) or	C536SE
		2SC536SP(F)	C536SF
QR601		RES. BUILT-IN TRANSISTOR DTC124ES	C124ES or
			C3400
		DIDOES	
D601		DIODE 1N4002	1N4002
D603		DIODE 1N4003	1N4003
D604		DIODE 1N4003	1N4003
D605		ZENER DIODE MTZ30AT or	MTZ30A
		MTZ30B or	MTZ30B
		UZ30BSC	UZ30BSC
D606		ZENER DIODE MTZ4.7B or	MTZ4.7B
		UZ4.7BSC	UZ4.7BSC
D607	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D608	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D609	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D610	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D611	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D612	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D613	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
D614	⚠	RECTIFIER DIODE 1SR35-200A or	A1SR35200AHP
		1N4003	1N4003FZ
		CAPACITORS	
C603	⚠	ELECTROLYTIC CAP. 2200UF/35V ±20%	63E0228
C604	⚠	ELECTROLYTIC CAP. 2200UF/16V ±20%	626C228
C605	⚠	ELECTROLYTIC CAP. 2200UF/35V ±20%	63E0228
C606		ELECTROLYTIC CAP. 47UF/63V ±20%	126G476
C607		ELECTROLYTIC CAP. 22UF/50V ±20%	126F226
C608		ELECTROLYTIC CAP. 47UF/16V ±20%	126C476
C609		ELECTROLYTIC CAP. 47UF/16V ±20%	126C476
C610		ELECTROLYTIC CAP. 47UF/25V ±20%	126D476
C611		ELECTROLYTIC CAP. 47UF/35V ±20%	126E476
C613		ELECTROLYTIC CAP. 100UF/16V ±20%	126C107
C951		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C952		ELECTROLYTIC CAP. 1UF/50V ±20%	126F105
C953		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C954		ELECTROLYTIC CAP. 10UF/16V ±20%	126C106
C955		POLYESTER FILM CAP. 0.047UF/50V ± 5%	1254473
C956		ELECTROLYTIC CAP. 100UF/16V ±20%	126C107

ELECTRICAL REPLACEMENT PARTS LIST [VCR]

Ref.	⚠	Description	Parts No.
C957		ELECTROLYTIC CAP. 100UF/16V ±20%	126C107
C958		ELECTROLYTIC CAP. 470UF/16V ±20%	126C477
C959		ELECTROLYTIC CAP. 33UF/6.3V ±20%	126A336
		RESISTORS	
R601	⚠	SOLID RES. 1/2W ±10% 3.3M OHM	1330024
R602		METAL RES. 1W ± 5% 1K OHM	534A102
R603		CARBON RES. 1/2W ± 5% 2.2K OHM	1322222
R605		CARBON RES. 1/5W ± 5% 27K OHM	1324273
R606		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R609		CARBON RES. 1/5W ± 5% 100K OHM	1324104
R610		CARBON RES. 1/5W ± 5% 1.2K OHM	1324122
R611		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R612		CARBON RES. 1/5W ± 5% 22K OHM	1324223
R952		CARBON RES. 1/5W ± 5% 240K OHM	1324244
R953		CARBON RES. 1/5W ± 5% 330 OHM	1324331
R954		CARBON RES. 1/5W ± 5% 1K OHM	1324102
R955		CARBON RES. 1/5W ± 5% 4.7K OHM	1324472
R956		CARBON RES. 1/5W ± 5% 2.2K OHM	1324222
R958		CARBON RES. 1/5W ± 5% 820 OHM	1324821
R959		CARBON RES. 1/5W ± 5% 18K OHM	1324183
R960		CARBON RES. 1/5W ± 5% 4.7 OHM	1324479
R962		METAL RES. 1W ± 5% 1.5 OHM	1330317
R964		METAL RES. 1W ± 5% 1.5 OHM	1330317
		MISCELLANEOUS	
L2031		SCREW TAPPING	DBM13100
L2032		SCREW TAPPING	DBM13100
L2034		SCREW CE-TIGHT	GZMC408
			GTMC408
CM-1		CONNECTOR ASS'Y 2P	OVE400321
CM-2		CONNECTOR ASS'Y 2P	OVE400319
CN-1		ANGLE SOCKET CONNECTOR 15P	1770610
RL601	⚠	POWER RELAY	1680085
T601	⚠	TRANS	1150996
		CORD STOPPER	1790417
	⚠	AC CORD	5750437
B2-7		SHEET, INSULATOR	OVM400544
B2-8		HEATSINK	OVM200173A

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